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Lessons learned from eco-district pilot projects: the importance of stakeholder relations

par

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Lessons learned from eco-district pilot projects: the importance of stakeholder relations

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Résumé

Le changement climatique devenant de plus en plus une réalité à laquelle les villes du monde entier sont confrontées, les menaces environnementales globales et locales à celles-ci soulignent la nécessité d'un nouveau paradigme dans les disciplines du cadre bâti, un nouveau paradigme autant en termes des processus de conception et de planification que des résultats construits. Afin de répondre à cet appel en faveur d'un développement urbain plus durable et plus résilient, au cours de la dernière décennie, un nombre croissant d'outils de quartiers durables ont vu le jour. Alors que plusieurs études ont cherché à comprendre le contenu, la forme et la structure des outils de quartiers durables, il existe encore des lacunes importantes concernant le « comment » de ces outils : Comment les outils de quartiers durables mènent-ils à de meilleures pratiques dans les domaines de l'architecture et de l'urbanisme? Comment ces outils sont-ils mis en œuvre et quelles leçons peut-on en tirer ? Comment contribuent-ils à briser les silos professionnels pour favoriser une réflexion plus intégrée et collaborative ? Cette thèse vise à expliquer comment les outils de quartiers durables sont utilisés dans la pratique et dans quelle mesure ils contribuent à l'évolution vers un paradigme plus régénératif et résilient.

Ce projet de recherche de nature qualitative repose sur trois études de cas approfondies de projets pilotes d'éco-quartiers qui ont expérimenté avec des outils de quartiers durables : d'abord, les projets pilotes « EcoDistricts » à Portland en Oregon ; deuxièmement, le projet pilote « BREEAM-Communities » à Malmö en Suède ; et troisièmement, le projet pilote « superîlot » et l'outil « Urbanisme Écologique » à Barcelone, en Espagne. Le projet de recherche utilise une stratégie exploratoire dans laquelle des entrevues semi-structurées avec les parties prenantes impliquées dans ces projets pilotes permettent de construire un cadre théorique fondé sur le processus.

Les résultats démontrent les nombreuses façons dont les outils de quartiers durables ont un impact sur la pratique, en particulier à l'égard des quatre volets suivantes : la collaboration, la participation citoyenne, les relations entre les parties

prenantes et la communication visuelle. Les résultats de l'étude de cas ont également mis en lumière les écarts entre les attentes des outils de quartiers durables et la réalité de leur mise en œuvre. En effet, les études de cas identifient des obstacles externes et internes qui expliquent la raison pour laquelle le nouveau paradigme se manifeste de façon marginale, par l'entremise des outils. Les résultats servent à rappeler que les outils de quartiers durables ne peuvent être compris en vase clos. Au contraire, comment et quand ils sont utilisés et comment ils sont encadrés sont tout aussi importants. L'application réussie de ces outils dépend de diverses conditions qui peuvent conduire à une meilleure collaboration, participation citoyenne, relations entre les parties prenantes et communication visuelle. Celles-ci incluent, par exemple, l'alignement des atouts, des actions et des attentes des parties prenantes ; favoriser les attributs internes dans les équipes de planification, tels que la capacité renforcée, le leadership fort et la confiance dans le processus ; disposer de mécanismes de résolution des conflits ; et en veillant à ce que la participation de la communauté soit non seulement profonde mais suffisamment précoce pour avoir un impact sur la prise de décision. Sur la base de ces résultats, le projet propose un « cadre de soutien aux parties prenantes » pour les outils de quartiers durables de troisième génération. Au niveau macro, il propose trois principes directeurs pour les outils de quartiers durables. À une échelle plus fine, il fournit une série de concepts et de boîtes à outils pour aider les dirigeants d'éco-districts à développer des processus plus régénératifs, résilients et justes.

Mots clés : écoquartiers, outils de quartiers durables, design régénératif, résilience, collaboration, participation, communication visuelle, gestion de parties prenantes, recherche qualitative, EcoDistricts, BREEAM-Communities, superblock, Ecological Urbanism

Abstract

As climate change becomes more and more a reality that cities around the world face, global and local environmental threats to cities highlight the need for a new paradigm in built environment disciplines, a new paradigm as much in terms of design and planning processes as built outcomes. In order to help answer this call for more sustainable and resilient urban development, over the past decade or so, a rapidly increasing number of neighbourhood sustainability frameworks have emerged. While several studies have aimed at understanding the content, form and structure of neighbourhood sustainability frameworks, important knowledge gaps exist concerning the 'hows' of these frameworks: How are neighbourhood sustainability frameworks leading to better practice? How are these frameworks being implemented, and what can be learned from this? How are they contributing to breaking down professional silos to foster integrated and collaborative thinking? This dissertation aims at explaining how neighbourhood sustainability frameworks are used in practice and to what extent they are contributing to the shift towards a more regenerative and resilient paradigm for the built environment.

This qualitative research project is based on three in-depth case studies of eco-district pilot projects that have experimented with neighbourhood sustainability frameworks: first, the EcoDistricts pilot projects in Portland, Oregon; second, the BREEAM-Communities Masthusen pilot project in Malmö, Sweden; and third, the superblock pilot project and the Ecological Urbanism framework in the Sant Martí district of Barcelona, Spain. The research project uses a qualitative, exploratory approach in which semi-structured interviews with key stakeholders involved in the pilot projects helped to construct an analytical framework – the 'process-based approach.'

The results show the number of ways in which the neighbourhood sustainability frameworks impact practice, specifically in terms of four dimensions: collaboration,

community participation, stakeholder relations and visual communication. The case study results also shed light on the gaps between the expectations of the frameworks and the reality of how they are implemented. Indeed, external and internal barriers are identified in the case studies, which serve to explain why the frameworks are making only modest progress in the shift to a new paradigm. The results serve as a reminder that neighbourhood sustainability frameworks cannot be understood in a vacuum. On the contrary, how and when they are used, and how they are framed are equally important. The successful application of these frameworks depends on a variety of conditions that can lead to better collaboration, community participation, stakeholders relations and visual communication. These include for instance, the alignment of stakeholder assets, actions and expectations; fostering internal attributes in the planning teams; having conflict resolution mechanisms in place; and ensuring that community participation be not only deep but also early on enough to impact decision-making. Based on these results, the project proposes a "stakeholder support framework" for third generation neighbourhood sustainability frameworks. At a macro-level, it proposes three guiding principles for neighbourhood sustainability frameworks. At a finer-grain scale, it provides a series of concepts and toolkits to help eco-district leaders develop more regenerative, resilient, and just processes.

Keywords : eco-districts, neighbourhood sustainability frameworks, regenerative sustainability, resilience, collaboration, participation, visual communication, stakeholder management, qualitative research, EcoDistricts, BREEAM-Communities, superblock, Ecological Urbanism

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CHAPTER 1

Introduction: The Sustainable Development Crisis and the Need for a New Approach

This chapter explains the urban environmental and social crises that many cities worldwide are facing, such as climate change, biodiversity losses, vulnerability to disasters, and peak natural resources. Unfortunately, several technical, socio-professional, and economic barriers hinder progress on the sustainable development front. In response to these challenges, some scholars call for more radical responses, a shift in paradigm, and a shift in the ways that professionals practice. There nevertheless exists an instrumental knowledge gap for how to implement this new regenerative paradigm in practice.

Chapter 1: Introduction: The Sustainable Development Crisis and the Need for a New Approach

As the world enters a new climate era, several disturbing facts concerning global and local environmental threats to cities highlight the need for a new paradigm in urban planning and development. Global environmental problems such as climate change, the decline of ecosystems and accompanying biodiversity loss, increase in frequency and severity of disasters, and depletion of natural resources threaten many metropolitan areas. Disasters such as flooding wreak havoc on cities, having negative impacts on health, destroying buildings, damaging livelihoods, and causing ecological distress. And slower-burning disasters such as air pollution, rising sea levels, urban sprawl and urbanization, and so forth, highlight the fragility of cities. Many scientists and researchers believe that there is no escaping climate change; "Even societies with high adaptive capacity are vulnerable to climate change and variability and to climate extremes." (IPCC, 2007, p. 56)

The challenges described above highlight the need for cities, and especially densely-populated areas, to anticipate and adapt to climate change and variability in a way that is sustainable (Thomas-Maret et al., 2012). It is imperative that cities search for sustainable and resilient solutions -- socially, ecologically, economically, and institutionally, with benefits that touch many spatial and temporal scales. However, as S. Campbell (1996) notes, these aspects may run in conflict with one another. Some ecological design scholars call for radical design solutions that do not stop at improving efficiency and doing 'less harm' to the environment, but that restore the wounds of the past and actually produce social and natural capitals (Raymond J Cole, 2012; Du Plessis, 2012; Mang & Haggard, 2016; Mang & Reed, 2012). These scholars insist on the need for a new paradigm based on an ecological, rather than anthropocentric and mechanistic worldview. This is the position held by *net positive* and *regenerative sustainability*[1]

[1] Regenerative sustainability is a process-oriented, restorative approach to design. Whereas conventional definitions of sustainable or green design tend to focus on energy efficiency and doing less harm to the environment, regenerative sustainability stresses "doing good" to the built environment, i.e. restoring natural habitats, creating surpluses of energy, closing loops, etc. (R. J. Cole, 2012; Du Plessis, 2012; Mang & Reed, 2012). The 'regenerative paradigm' is a central concept in this thesis in that it influenced the research design and it is at the heart of the

scholars. From this perspective, integrated urban planning solutions that simultaneously realize several aims are seen as necessary, which in turn require collaboration between different built environment disciplines (engineering, architecture, urban planning, landscape architecture, and so forth).

Nevertheless, technical, economic, political, and, especially, socio-professional barriers hinder the implementation of promising urban or neighbourhood-scale solutions that promote regenerative sustainability, adaptation, and resilience, such as district energy systems, shared heating networks, and green infrastructure, to the risks and challenges described above – at least at the scale that is necessary to adequately deal with these challenges. The perceived costs and disruptions of sustainability efforts also lead to resistance to adopting innovative sustainability strategies. Moreover, their design is not necessarily an engineering challenge, but an integrated design challenge, as they require interdisciplinary collaboration and breaking down professional silos that dominate current working methods. Thus, even if viable solutions exist for cities, the ways in which cities operate (technically, economically, administratively, and socio-professionally) in silos hinders the implementation of these solutions.

Given this daunting list of urban environmental and social problems and systemic barriers to implementation, how should cities go about making advances towards a more regenerative and resilient paradigm? An increasingly popular way of addressing these problems is by developing 'eco-districts,' an umbrella term for a geographically-bound and self-defined sustainable neighbourhood development. Fitzgerald and Lenhart (2016) define an eco-district as "a neighborhood scale development or redevelopment that addresses climate mitigation and adaptation with sustainable planning strategies and by employing state-of-the-art technologies in green building, smart infrastructure, and renewable energy to create sustainable, resilient, and inclusive districts." (p. 365) The thinking behind eco-districts is that they operate at a manageable scale for cities, but at the same time, can raise sustainability and resilience standards at the city-wide scale. Eco-districts can also act as testing beds where cities can experiment, reevaluate and adapt their practices in order to best respond to the sustainability and resilience agendas.

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second research question. However, as will be seen in the case studies, this paradigm has not yet fully taken hold for a number of reasons that will be addressed in this thesis.

In the past ten years or so, several eco-district frameworks have been developed globally to help define, implement and/or evaluate eco-districts, which seem to be a logical step in a long history of green building tool development, but also part of a growing trend to rate cities according to their sustainability or resilience criteria. The first generation of such frameworks use performance criteria by which to evaluate a sustainable neighbourhood and offer a sustainability certification. The second generation have evolved to mix performance criteria with 'design support' or guidance in terms of governance and community engagement. As these frameworks are quite new, the impact that these frameworks have on tangible sustainability outcomes and on the design/planning process remain poorly understood. It remains to be seen whether and how they are contributing to a shift in paradigm.

1.1 Research Problem

"If the process of transformative change is the greatest barrier standing in the way of achieving a sustainable condition, it seems the aspect of 'how one changes' should be of great interest to the design and building community." (B. Reed, 2007, p. 677)

Tools and frameworks play an important role in mediating between theory and practice and thus should play a role in helping to translate the aims from the regenerative sustainability and resilience literatures into tangible strategies, policies, and best practices. Following Senge and Scharmer (2008) stock-flow model of a knowledge-creating system, tool development contributes to capacity-building and eventually leads to practical know-how. Moreover, tools can be vehicles for creating a 'common language' between researchers, practitioners, and civil society. However, in the emerging field of eco-district planning, it is unclear to what extent neighbourhood sustainability frameworks are indeed contributing to capacity-building, practical know-how, and to reinforcing the regenerative design and resilience agendas.

While there is a growing literature on eco-districts, the emphasis in the literature remains on the 'what' of eco-district planning ('what' constitutes sustainable practice, 'what' constitutes an eco-district, 'what' performance metrics are required, etc.) and there are significant knowledge gaps concerning the 'hows' of eco-districts. The role and full potential of eco-district frameworks (and the professionals and other stakeholders involved in their application), in

driving better practice, are inadequately understood. As a community of researchers and practitioners, should we not also be asking *how* eco-districts can meaningfully contribute to city-scale sustainability and resilience? How are eco-districts being implemented, and how do cities learn from this? How are eco-districts breaking down professional silos to foster integrated thinking? With respect to ecodistrict tools and frameworks, several other questions also emerge. For example, how are problems defined and decisions made? How broad is the sphere of stakeholder engagement? What new skill sets, if any, are required? As eco-districts catch on as a viable strategy for achieving city-wide sustainability goals, and the use of neighbourhood sustainability frameworks becomes more widespread, urban decision-makers and professionals need to understand the effectiveness of these frameworks on improving *practice.* Based on the knowledge gaps described above, the following research questions are posed for the purposes of this dissertation:

Main research questions

- How do neighbourhood-scale sustainability tools and frameworks impact the design process for the planning team members and other stakeholders involved in the project?
- To what extent are current neighbourhood sustainability frameworks helping to move towards a more integrative model of practice?

1.2 Purpose of research and significance of the study

As **Chapter 3: Theoretical Framework** explains, the primary objective of this doctoral research is to answer the research questions by building a "process-based approach" to understanding neighbourhood sustainability frameworks. A process-based approach (Raymond J Cole, 2005) takes a step back and attempts to understand a tool/framework within a specific context. It covers *how the tool is deployed*. It therefore shifts the emphasis in the literature from 'product' to 'process' (although it is acknowledged that the two are in reality often intertwined) and to the human dimension of sustainable neighbourhoods: the people involved in the design and planning process. This includes architects, urban planners, sustainability consultants, engineers, landscape architects, city officials and city planners, project managers, and representatives from the local

community. This research acknowledges them and their practices as critical to both real life progress and to theory building. Figure 1.1 below presents some of the elements that make up a process-based approach. Although this figure presents a rational and linear model, as will be shown in the three case study chapters, this process is in actuality messy and sometimes thrown off course by local politics, crises, interest groups, and power struggles.

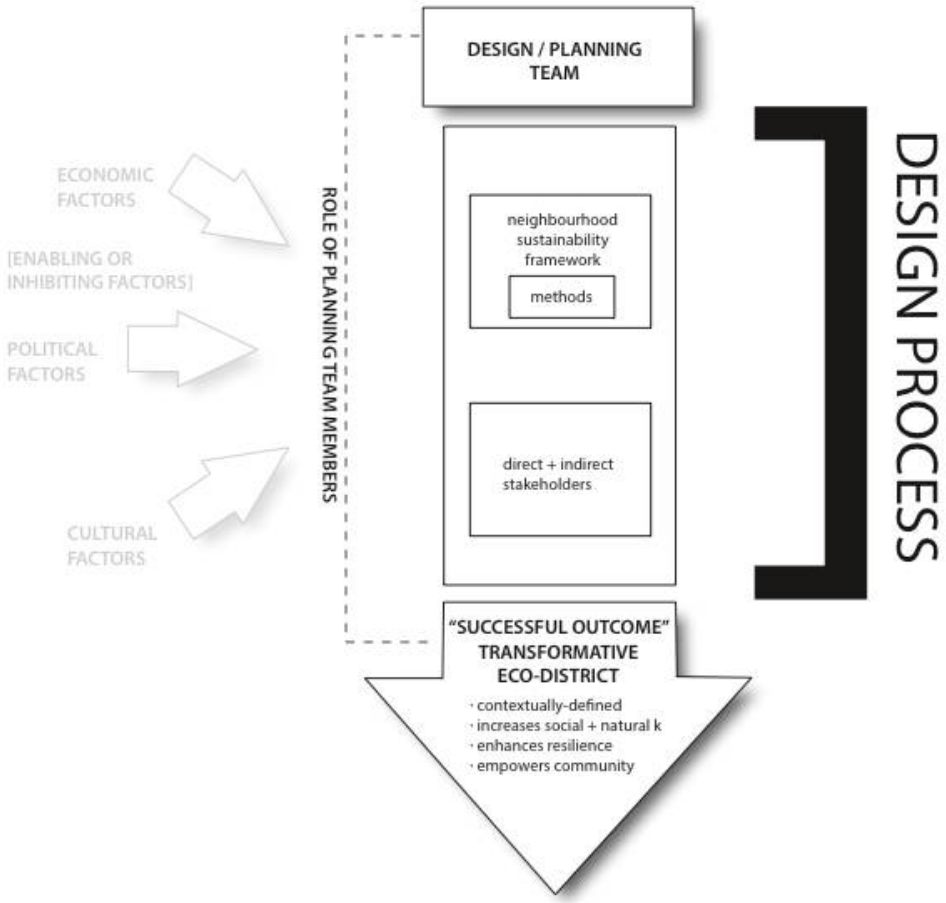

Figure 1.1: Preliminary presentation of "process-based approach." Source: Oliver, 2015.

The significance of this research is that it will build new knowledge on how stakeholders and their design / planning processes fit into the equation. It aims to contribute to the literature on urban sustainability, neighbourhood-scale sustainability, eco-districts, and neighbourhood-scale sustainability frameworks. In this sense, the results are valuable to communities or municipalities who wish to test out eco-district frameworks, as they point out several important procedural elements that can facilitate the framework application.

Research objectives

- To clarify how eco-district processes and frameworks impact practice for professionals, other stakeholders, and cities
- To explain the extent to which neighbourhood sustainability frameworks are contributing to a change in paradigm – in moving towards more regenerative, resilient cities.
- To contribute towards building a new process-based line of inquiry on eco-districts

1.3 Research design

In order to answer the research questions, a qualitative approach based on interviews with key stakeholders (architects, urban planners, sustainability coordinators, project managers, city officials, community members, etc.) was chosen as the best research methodology and method. The research also uses the multiple case-study approach. The author selected case studies of second generation neighbourhood-scale sustainability frameworks (eco-district frameworks) that a) were applied in pilot projects in recent years; b) that went beyond conventional performance-based approaches (i.e. that included a 'process-based' component); and c) that were recognized in the literature or in practice as some of the most promising frameworks for encouraging transformational change and d) that engaged multiple stakeholders. The case studies selected are:

- The EcoDistricts pilot projects in Portland, Oregon, led by the Portland Sustainability Institute, and officially supported by the City of Portland, in a brownfield site and an existing business district in Portland
- The BREEAM-Communities Masthusen eco-district pilot project in Malmö, Sweden, a sustainable neighbourhood project led by a private developer in a brownfield site
- The Superblocks eco-district pilot project and the Ecological Urbanism framework in the Sant Martí district of Barcelona, Spain, led by the City of Barcelona, the district of Sant Martí and in collaboration with the Urban Ecology Agency of Barcelona in an existing medium density residential and light industrial neighbourhood

The case studies, together, therefore offer an international perspective on the phenomenon of neighbourhood sustainability frameworks.

The methodology is not one of a traditional comparative case study analysis or cross-case analysis, one of the main reasons being that the three case studies are very different from one another (in terms of the type of framework, when it was used, the geopolitical context, etc). Rather, it is an exploratory research that treats each case study as its own unique and holistic story with lessons to be learned. As will be shown in **Chapter 8: Conclusion,** certain transversal patterns emerge from the case studies about, for example, common barriers to shifting the paradigm, and common reasons why there are gaps in the expectations and realities of how the frameworks are implemented.

In order to collect sufficient data in each pilot project, the researcher spent one month in each of the locations and conducted interviews with key stakeholders involved in the pilot projects. In the case of Barcelona, she returned for a second visit in September 2016 to observe the superblock pilot project simulation and conduct more interviews. Her visit to Portland was two years after the EcoDistrict pilot projects were completed and the final evaluation published; her visit to Malmö was while the BREEAM-C certified project was under construction and certification was complete; and her visits to Barcelona were just prior and during the pilot project simulation – a pilot project still in progress. Interviews typically lasted 45 minutes to one hour and were semi-structured. Interviewees were asked to sign a consent form and were given the option to withdraw from the study at any time. Interviewees in this dissertation are anonymous and referred to by their job title (for instance, the Masthusen project Sustainability Coordinator). Data collected from the interviews is complemented by document analysis that includes both primary sources (official documents, meeting minutes, neighbourhood plans, etc.) and secondary sources (newspaper articles, journal articles, etc.). The methods for doing so involved coding all interviews using a qualitative analysis software called nVivo in order to uncover recurring themes and further expanding on these themes in the case study chapters in order to help construct a theoretical framework.

This dissertation is also important because it underscores the significance of qualitative, exploratory research in neighbourhood sustainability. Many studies on neighbourhood sustainability frameworks quantitatively develop appropriate neighbourhood-scale sustainability or resilience indicators (Cutter et al., 2010; Liu & Plyer, 2007; Pelling, 2003), or use cross-case

analysis to study the cultural compatibility of different Neighbourhood Sustainability Assessment tools (Bird, 2015; Cable, 2008; Nguyen & Altan, 2011; Säynäjoki et al., 2012; Sharifi & Murayama, 2014b). Qualitative research is quite rare in this domain, thus making this doctoral dissertation unique in this respect.

To summarize, this dissertation is unique in the way that it challenges and goes beyond the product-based approach towards understanding neighbourhood sustainability, in the way that it emphasizes the importance of practitioners and other stakeholders and *how* they work in eco-district pilot projects, and in the way that it uses qualitative, exploratory research to contribute to new knowledge in the field.

1.4 Dissertation Layout and Overview

This dissertation is divided into 8 chapters, including this introduction. Each chapter begins with an abstract and a chapter overview section to facilitate easy reading. Below is an overview of how the dissertation will be structured. Several academic papers were published throughout this research project and are indicated in italics below the description of each chapter.

Chapter 1: Introduction, is designed to give an overview of the urban environmental and social problems that cities face, and that require a shift in paradigm towards a more regenerative and resilient built environment. Today, much of the emphasis on the literature on ecodistricts remains on the 'what' of ecodistricts (i.e. what constitutes ecodistricts, what constitutes sustainable practice) rather than the 'how.' There is a significant knowledge gap concerning the *processes* and *frameworks* required for building ecodistricts. Moreover, if ecodistricts are to have widespread impact, then shouldn't professionals, other stakeholders, and cities learn from their experiences and move towards a new paradigm? The introductory chapter explains the main research questions, which are: How do the planning processes and frameworks used in eco-district projects impact practice? To what extent do ecodistrict frameworks contribute to a change in paradigm? After outlining the key research objectives (which above all are to help build a new process-based line of inquiry on eco-districts), it presents an overview of the research design. It also explains the importance of a qualitative research approach that focuses on

stakeholders' experiences in applying eco-district frameworks in order to support building this new process-based line of inquiry.

Chapter 2: Literature Review: From Weak to Strong Definitions of Sustainability in Neighbourhood-scale Interventions presents an extensive literature review on sustainable neighbourhoods, neighbourhood sustainability frameworks, and the design process –whose relationships will be explored in this dissertation. In order to inform this discussion, it draws from several different disciplines, including literature from the fields of Architecture, Urban Planning, Urban Ecology, and Environmental Studies, and makes the distinction between weak and strong definitions of sustainability. After presenting and defining what is meant by *the design process,* the chapter reviews the history, evolution, and significance of sustainable design, regenerative design, urban ecology, and resilience, each of which present different ways of understanding sustainable neighbourhoods. The different definitions of sustainable neighbourhoods, as well as the wide array of neighbourhood sustainability frameworks, are also reviewed in depth. The literature review at once picks up on several important concepts for developing a process-based approach for neighbourhood sustainability frameworks and highlights several gaps in the literature. Here is a list of publications that build on one or more concepts from the literature review, all of which were published during the six years of the researcher's doctorate:

Pearl, Daniel and Amy Oliver. "Research into Action: Mining the Dormant Inherent Potential so that Infrastructure Projects can Catalyze Positive Change." Actes de la 11onference SB13 Stream 5: Net Positive Buildings. CAGBC (2013): 10-23.

Pearl, Daniel S., and Amy Oliver. "The role of 'early-phase mining' in reframing net-positive development." Building Research & Information 43.1 (2015) : 34-48.

Oliver, Amy. « Des outils et des mesures d'adaptation aux changements climatiques » dans Thomas, I. et Da Cunha, A. (Ed.). (2017). La ville résiliente : comment la construire ? Les presses de l'Université de Montréal.

Oliver, Amy, Gascon, Emilie & Isabelle Thomas. "Have France's écoquartiers (eco-districts) made advances in resilient city-making?" Submitted to Risques Urbains (under review).

Oliver, Amy and Pearl, Daniel S. "White Paper: Regenerative Development and Design." Royal Architectural Institute of Canada. Draft submitted on June 1st, 2018.

Influenced by key concepts and themes from the literature review, but building primarily on interviews with stakeholders in the case studies, **Chapter 3: Theoretical Framework: A Process-Based Approach** presents a conceptual framework for the dissertation. The chapter begins by explaining the technical-rational paradigm based on an anthropocentric worldview, and the limits to this approach for making advances in the sustainability and resilience agendas. It therefore highlights the need for a new paradigm, and a process-based approach. Although the conceptual framework is in part a *result* on the interview process, the conceptual framework was brought to the beginning of the dissertation for clarity's sake. This research process highlights certain gaps in the literature, as certain key concepts emerged in the interviews that were not part of the initial literature review. In this sense, this chapter establishes the evolution of the conceptual framework over time. The conceptual framework is then used subsequently to analyze the case studies. The following two publications reflect elements of the researcher's theoretical framework:

Oliver, Amy. "Understanding net positive neighbourhoods: Three perspectives." World Sustainable Buildings 2014 conference proceedings.

Oliver, Amy, Isabelle Thomas, and Michelle Thompson. "Resilient and Regenerative Design in New Orleans: The Case of the Make It Right Project." SAPIENS (2014).

Chapter 4: A Qualitative, Exploratory Methodology in Three Eco-district Case Studies explains the choice of a qualitative methodology and constructivist epistemology, and their theoretical groundings. It explains the advantages and disadvantages of qualitative vs. quantitative research vs. mixed methods research, and inductive vs. deductive reasoning. The case study methodology was selected to help build this analytical framework, and three case studies were selected:

- the EcoDistricts pilot project in Portland, USA;
- the BREEAM-Communities pilot project in Malmö, Sweden;
- and the superblock pilot project in Barcelona, Spain

The justification for choosing these three cases is explained. Three separate field studies were conducted to collect relevant data in 2015-2016, which involved conducting semi-structured interviews with a broad range of stakeholders involved in the pilot projects as well as conducting

a primary and secondary documents analysis. All interviews were coded using a qualitative analysis software called nVivo in order to uncover recurring themes and then these themes were further developed in the case studies. Some key themes that surfaced in interviews were recurring across all three case studies, while others were unique to each case study. The tensions that emerged in each of the cases were also quite unique, each shedding light onto different challenges in implementing eco-districts that provide valuable insight for theory and practice.

Chapters 5, 6 and 7 present findings from the three eco-district pilot project case studies. **Chapter 5** reports on findings from the EcoDistricts pilot projects, a case study that proves that it is not enough to just have the "right stakeholders at the table." These stakeholders must be clear about each other's roles and responsibilities, otherwise significant tensions arise. This case study also provides insight into the external and internal contributing factors that allow communities to carry the eco-district concept forward, suggesting new elements to add to existing literature on collaborative governance. **Chapter 6** then takes the reader across the ocean to Malmö, Sweden, where a private developer and its design team experimented with an eco-district development assessment model imported from the UK. The BREEAM-Communities framework mandates community participation in various stages of the master planning process, and this case study brings about valuable lessons concerning the nature and timing of community participation. It also explains how the design team invented new, innovative ways of distilling complex information into visual communication tools that proved integral for the team's progress. **Chapter 7** then discusses the Ecological Urbanism framework and superblock pilot project in Barcelona, where the Urban Ecology Agency of Barcelona and certain politicians in the Barcelona City Council are trying to radically alter the urban morphology of the city by reducing vehicular traffic to main arteries and creating more pedestrian- and bicycle-only streets, and drastically increasing public space. Radical changes almost always are accompanied with controversy, and this chapter highlights the mixed successes and challenges that this pilot project had in terms of collaboration and participation. Each of these three case study chapters explains its own external and internal contributing factors, which either inhibited or enabled the pilot project process and testing of the eco-district frameworks. And each chapter presents its own

unique lessons for theory and practice. The following paper published results from the BREEAM-Communities and superblock pilot projects:

Oliver, Amy et Daniel Pearl. "Rethinking sustainability frameworks in neighbourhood projects: a process-based approach." Building Research & Information [Festschrift issue dedicated to Ray Cole] (2017): 1-15.

Chapter 8 is the concluding chapter, which summarizes the dissertation – its key concepts, conceptual framework, case study analysis, and resulting findings. But it also synthesizes the findings from the three case studies, and from these findings and relevant literature/theory, it makes recommendations on how neighbourhood sustainability frameworks can be improved. More specifically, it recommends that frameworks offer 'stakeholder support.' It therefore broadens the focus and asks: How do eco-districts contribute to building more regenerative and resilient cities? To what extent do ecodistrict frameworks contribute to a change in paradigm? This chapter highlights the conclusions that can be drawn from the research and presents the ways in which the findings contribute to new knowledge in the arenas of eco-districts and sustainable neighbourhood frameworks. It takes a step back and resituates the dissertation within current discourse and extrapolates on the theoretical and practical implications of the research findings.

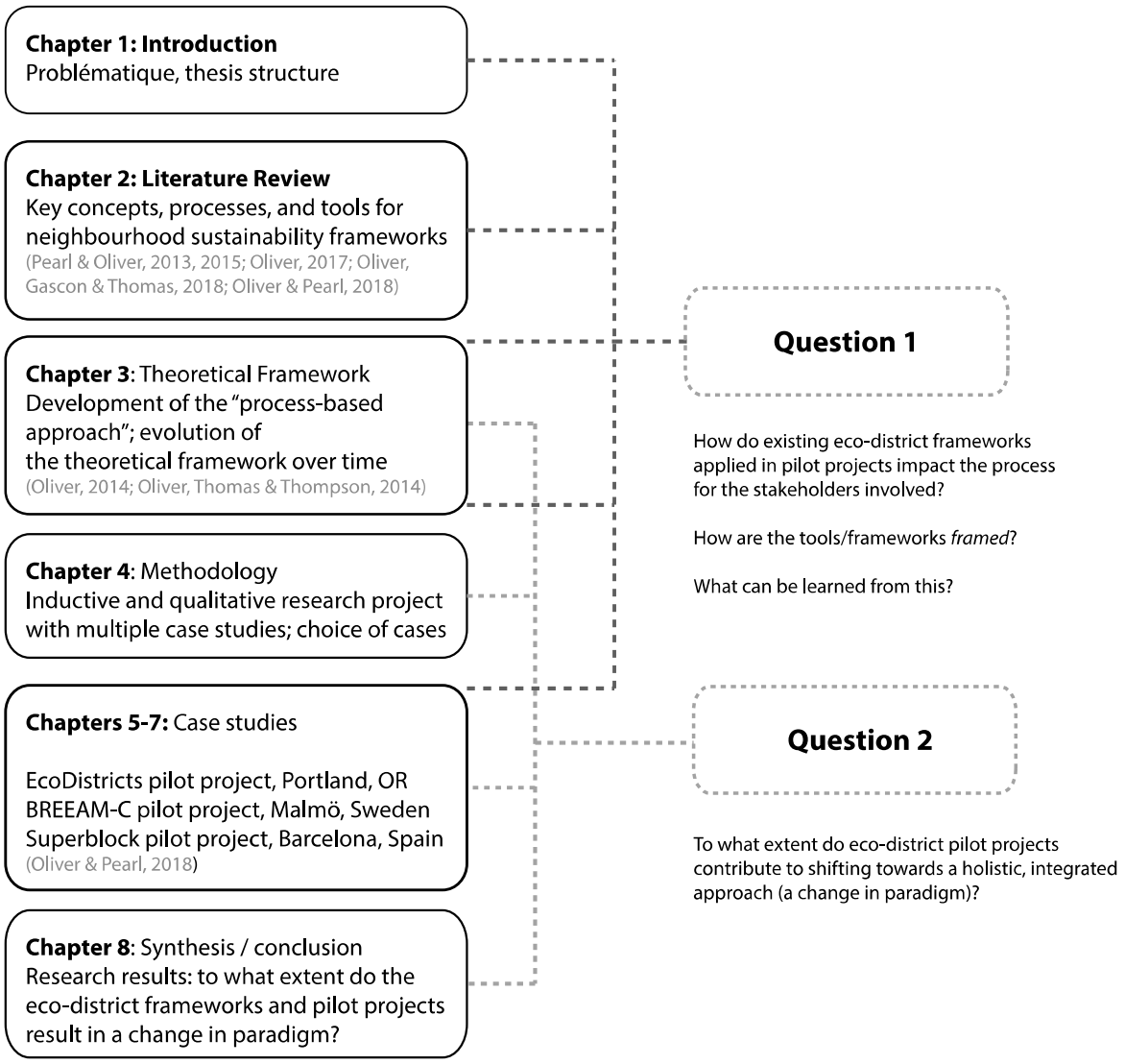

Figure 1.2: Overall dissertation structure. Source: author.

CHAPTER 2

Literature Review: From Weak to Strong Definitions of Sustainability in Neighbourhood-scale Interventions

Eco-districts are a rather recent phenomenon in the history of urban planning that have been receiving increasing attention in academic journals. Eco-districts are very complex, involving a wide range of stakeholders for both conception and implementation, that bridge spatial scales, and that require strong collaboration. This chapter is designed to help the reader understand the current state of literature on eco-districts, different conceptual approaches, types of design processes that can be used, and types of eco-district frameworks used in practice. A thread that unifies these different elements is the distinction between *weak* and *strong* definitions of sustainability.

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2.0 Overview of this chapter

Eco-districts are a rather recent phenomenon in the history of urban planning. They have been receiving increasing attention in academic journals, since it is thought that the neighbourhood-scale is an appropriate scale for targeting sustainability and climate change adaptation measures. Eco-districts are also very complex, involving a wide range of stakeholders for both conception and implementation, bridging spatial scales (buildings, public space, infrastructure) and requiring strong collaboration and coordination across disciplines, levels of government, and municipal departments. Understanding eco-districts therefore requires understanding their conceptual underpinnings, processes, and frameworks, the units of analysis of this chapter.

This chapter is designed to help the reader understand the current state of literature on eco-districts, understand different conceptual approaches to eco-districts, the different types of design processes that can be used, and the different types of eco-district frameworks available in practice. This chapter begins by explaining the current state of literature on neighbourhood-scale sustainability. Next, it reviews dominant conceptual approaches associated with an ecological worldview and how they conceive of sustainable neighbourhoods. Growing out of these conceptual approaches, it reviews and defines the design and planning processes and neighbourhood-scale sustainability tools and frameworks (focusing particularly on the distinction between product-based and process-based tools and frameworks). The literature review reveals that design processes and eco-district tools are often discussed in isolation from one another. In general, the literature often describes eco-district frameworks in a vacuum, without having a broader perspective on how, when, and by whom they are used. This knowledge gap should be filled in order to help members or the design team, municipalities, and communities understand how to better plan for regenerative and resilient neighbourhoods. Figure 2.1 presents a roadmap to the literature review covered in this chapter.

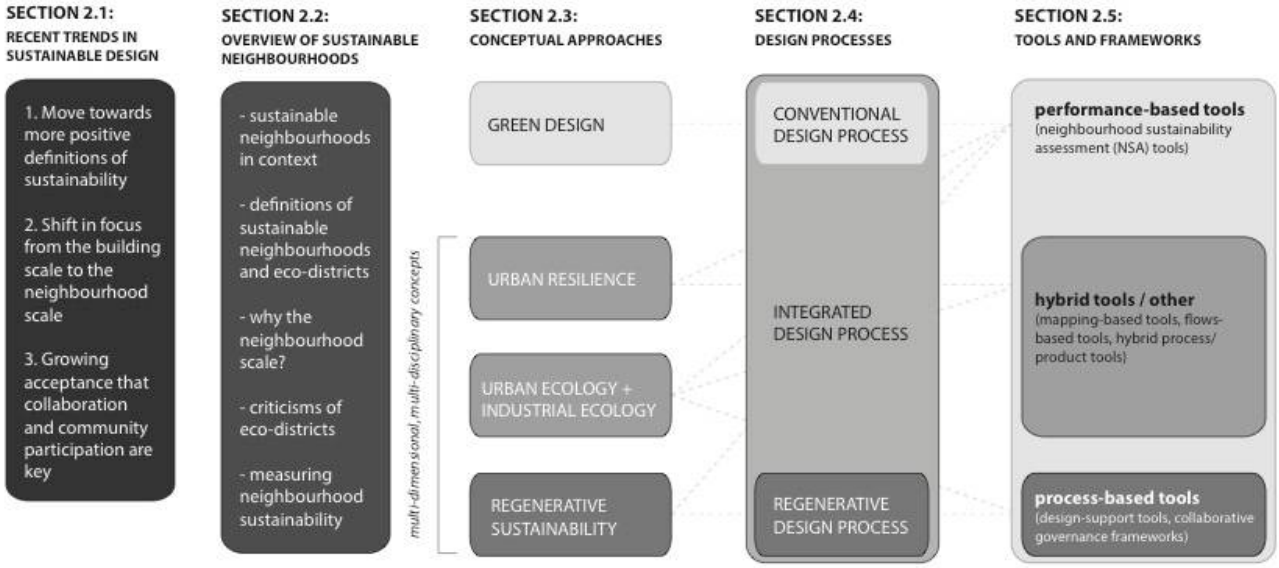


Figure 2.1.: Roadmap of the literature review presented in this chapter. Source: author.

2.1 Recent trends in the sustainable architecture & planning literature

In recent years, three trends have developed in the fields of sustainability and sustainable design. First, as the sustainable development and green building movements have evolved through different 'generations,' the most recent generation places more emphasis on *positive* understandings of sustainability. Whereas conventional definitions of sustainable or green design tend to focus on energy efficiency and doing less harm to the environment, and can be considered *weaker* definitions of sustainability (Devall & Sessions, 1985; Dryzek, 1997; Haughton & Hunter, 2004; Naess, 1973), this new wave that has been developing over the past twenty years or so has been moving towards definitions of design and development that stress "doing good" to the built environment, i.e. restoring natural habitats, being net positive in energy, closing loops, enhancing biodiversity, creating beauty, purifying water, and enhancing ecological and urban resilience (Birkeland, 2008; Raymond J Cole, 2012; Du Plessis, 2012; Hes & du Plessis, 2014; Mang & Haggard, 2016; Mang & Reed, 2012).

The relatively recent integration of the term 'resilience' into the fields of Architecture and Urban Planning further contributes to this new wave of positive definitions, as some resilience scholars promote a "building back better" approach in order to enhance a community's

resilience, sustainability and adaptive capacities (refer to figure 2.2). Urban and architectural design strategies that embody these ideas put forward by regenerative design and resilience are often described as "holistic," "integrated" and "synergistic" in the literature – meaning that one key intervention may serve multiple functions and create multiple benefits (Hes & du Plessis, 2014; Seltzer et al., 2010a; The Ecala Group, 2015). For instance, a waterfront green infrastructure intervention may at once enhance the community's resilience to natural disasters such as hurricanes or flooding, create high quality public space, help deal with rainwater runoff, enhance biodiversity, and diminish urban heat islands (UHIs).

A second trend in the sustainability and sustainable design movements is the shift in focus from the building scale to the neighbourhood scale. Recent research suggests that neighbourhoods provide the appropriate scale to affect change, rather than trying to affect change at the building scale or at the city scale (Berardi, 2013; Raymond J Cole, 2012; Conte & Monno, 2016; Seltzer et al., 2010a; Sharifi, 2013; Turcu, 2013). This is because it is unlikely that the change that needs to happen at a global scale will result from the accumulation of punctual interventions at the building scale. At the neighbourhood scale, on the other hand, cities can capitalize on synergies between buildings and *in between* buildings. Evidence of this trend is the growing number of neighbourhood-scale sustainability and resilience frameworks over the past ten years, which have largely expanded from building-scale sustainability tools.

A third trend is a growing recognition that community participation and interdisciplinary collaboration are key components in achieving the aims espoused by regenerative sustainability and resilience. Evidence of this is the increasing number of urban and neighbourhood-scale participatory tools. These tools often use software such as GoogleMaps or GIS to create interactive platforms. Some examples include the open-source tool developed at MIT called "Urban Network Analysis, and the GraBS model from the University of Manchester, which uses a participatory approach to GIS to map vulnerability to the risks of climate change. Interdisciplinary collaboration is also increasingly recognized in the literature as necessary for achieving the aims of regenerative sustainability and resilience. The city of Copenhagen, Denmark has introduced a new cross-departmental incubator called the Copenhagen Solutions Lab to collect data, create and test ideas, and develop technological solutions related to urban challenges such as climate

change; in other words, to enhance collaboration and coordination between different city departments. Indeed, there is growing recognition in cities for "the need to break down silos between departments in order to build an evidence base for decision makers." (Cavan & Kingston, 2012, p. 253) The growing literature on what is called an Integrated Design Process, where all members of a design team collaborate together from the beginning stages of a project, is further evidence of this trend (Busby Perkins & Will & Stantec, 2007; Hansen & Knudstrup, 2005; Larsson, 2004; B. Reed, 2009; W. G. Reed & Gordon, 2000; Zimmerman & Eng, 2006).

This doctoral dissertation positions itself at the heart of these trends, as it focuses on neighbourhood-scale sustainability frameworks, or eco-district frameworks, that move towards more *positive* definitions of sustainability – and how they influence or are related to new models of practice (i.e. collaborative, interdisciplinary, participatory, etc.) in eco-district projects. But what exactly is meant by an eco-district? What is meant by a neighbourhood? What opportunities and challenges does the neighbourhood scale present for achieving the aims of regenerative sustainability and resilience? And how are they included and integrated into the urban ecosystem and urban fabric?

2.2 The current state of literature on sustainable neighbourhoods

Elements of sustainable neighbourhoods can be traced back to the end of the 19th century to Ebeneezer Howard's concept of the 'garden city,' where medium-density residential development was combined with jobs, schools, and community amenities with ample green space and access to nature. However, it is really since the 1980s that there has been a steady increase and evolution in sustainable neighbourhoods. There are various forms of sustainable neighbourhoods that have been planned in the past several decades. To describe these briefly, in the 1980s, a few "eco-villages" emerged globally, which are small intentional communities that attempt to live low-impact lifestyles. Some notable examples include Arcosanti in Arizona, Ecovillage at Ithaca, New York and Findhorn Eco-village in Scotland. The first "eco-industrial park" (see section 2.3.4 for more) in Kalundborg, Denmark was first developed in the early 1970s; however, this concept became more mainstream in the 1990s (for example, during this time, around twenty eco-industrial parks were developed in the U.S.). Also in the 1990s

Europe became a pioneer in developing 'eco-districts' and 'eco-cities.' Well-known examples of these include, for example, Eva Lanxmeer in the Netherlands, Vauban in Freiburg, Germany, BedZed in the UK and Hammarby Sjostad in Sweden. These first examples experimented with sustainable technologies (such district energy, using anaerobic digesters for treating waste water), built low energy buildings, discouraged car use, and used cooperative decision-making. They did not use special tools or frameworks. Today, China has committed to developed hundreds of new eco-cities. In the mid 2000s, several countries introduced eco-city or eco-distirct policies and programs, such as *EcoCité* and *Ecoquartier* in France. And from the late 2000s until the present, a new wave of eco-districts has emerged globally, many of these experimenting with new, locally developed sustainability frameworks. These eco-districts, many of them urban regeneration projects, may range slightly in focus, but generally tend to emphasize sustainable transportation, walkability, eco-efficient buildings, renewable energy, resilience to disaster, and sustainable management of water and waste. Figure 2.2 describes the history of eco-districts in broad strokes.

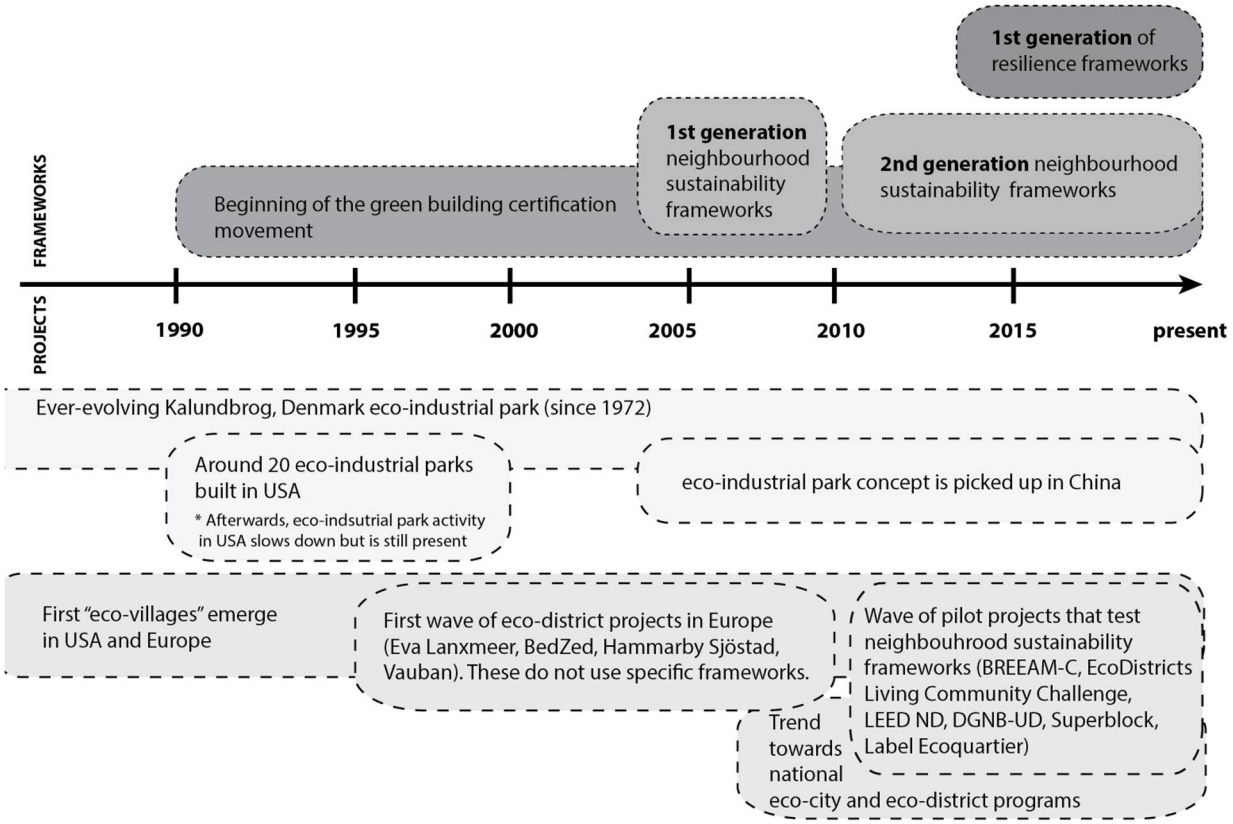


Figure 2.2.: Rough timeline of eco-district trends globally from the 1980s to the present. Source: author.

Although there a few examples of experiments with sustainable neighbourhoods in the seventies through nineties, it is only within the past fifteen to twenty years that neighbourhood-scale sustainability could arguably be called a *movement.* Evidence of this movement includes the increasing number of academic papers published on the subject of sustainable urban neighbourhoods (Barton, 1998; Breheny, 1992; Farr, 2011; J. Grant, 2005; Jabareen, 2006; Priemus & van Kempen, 1999; Williams & Dair, 2007; Williams & Lindsay, 2007), the growth of neighbourhood-scale sustainability indicators, a new generation of neighbourhood sustainability assessment tools, and an increase in neighbourdhood-scale sustainability frameworks. In fact, "Eco-City Frameworks – A Global Overview" (Joss & Tomozeiu, 2013) documents a comprehensive list of 43 neighbourhood-scale sustainability assessment frameworks, of which 35 were released since 2010 (Bird, 2015, p. 3). At the same time, neighbourhood-scale planning has become a focus of planning efforts in many countries. For example, in Canada, the Federation of Canadian Municipalities has been focusing Green Municipal Fund resources at the neighbourhood scale (Bird, 2015; Federation of Canadian Municipalities, 2013). The intersection of these two trends is the application of tools that assess how sustainable neighbourhoods are or are expected to be (Bird, 2015). It is important to note, however, that there is no consensus on what makes a neighbourhood sustainable, how to measure neigbourhood-scale sustainability, and what practices and processes are most effective in leading to neighbourhood-scale sustainability (Garde, 2009).

In the literature, neighbourhoods are defined in a variety of ways. Kellett et al. (2009) define neighbourhoods as a mix of residential and non-residential buildings and land uses within a radius of approximately 400 meters – corresponding to a comfortable five-minute walking distance from centre to edge, or approximately 50 hectares. Some assessment tools for neighbourhoods will assess a minimum area, such as the DGNB Urban Districts tool, which assesses a minimum of 2 hectares. EcoDistricts, formerly the Portland Sustainability Institute, uses "district" and "neighborhood" interchangeably, saying that "[b]oth refer to a particular scale that is the planning unit of modern cities with a spatially or community-defined geography. Boundaries may include neighborhood or business association boundaries, urban renewal areas, local and business improvement districts, major redevelopment sites, watersheds, or geographic

demarcations, as appropriate." (Portland Sustainability Institute, 2010, p. 19) This dissertation does not abide by a very strict definition of a neighbourhoods. It simply refers to them as a planning unit bigger than a block or a few blocks, and smaller than a borough or political district: a subset of a broad community. The case studies used in this dissertation can be considered sub-sections of a neighbourhood.

Several words for 'sustainable neighbourhoods' have become popular over the past decade or so, including the accepted French term *écoquartier,* sustainable urban district, eco-neighbourhood, and eco-district. Boxenbaum defines an eco-distrct as:

> A built community that is sustainable in a holistic sense. The exact components of an eco-district and its associated construction practices have not (yet) solidified into a commonly accepted definition. Multiple reference tools, i.e. tools, methodologies or evaluation systems for designing eco-districts and assessing their performance, are being proposed and many are still under development. (Boxenbaum et al., 2011, p. 2)

Several other definitions of sustainable neighbourhoods have also been proposed and are summarized in Table 2.1. This dissertation will refer to eco-districts and sustainable neighbourhoods interchangeably.

Table 2.1.: Definitions of sustainable neighbourhoods in the literature. Source: author.

Term	Definitions	Author
Sustainable neighbourhood	The development of communities with consideration to environmental, social and economic goals in a balanced perspective	Churchill and Baetz (1999)
Sustainable neighbourhood	A holistic concept requiring the integrated design of transportation, water and building infrastructure, as well as urban forestry.	Engel-Yan et al. (2005)
Eco-district	A self-defined neighbourhood with an unwavering commitment to Equity, Resilience, and Climate Protection imperatives.	EcoDistricts (2016)
Eco-district	A neighborhood scale development or redevelopment that addresses climate mitigation and adaptation with sustainable planning strategies and by employing state-of-the-art technologies in green building, smart infrastructure, and renewable energy to create sustainable, resilient, and inclusive districts.	Fitzgerald and Lenhart (2016)
Eco-district	Geographically defined areas, such as neighbourhoods, institutional campuses, or employment districts within which flows of energy, water, nutrients, resources, information, financial capital, and cultural resources are localized, integrated, and synergized.	Seltzer et al. (2012)
Eco-district	A defined urban area in which collaborative economic, community, and infrastructure redevelopment is explicitly designed to reduce negative and produce positive environmental impacts.	McCartney (2013)
Eco-City	A human settlement modeled on the self-sustaining resilience structure and function of natural ecosystems.	International EcoCity Standards

écoquartier	A neighbourhood which responds to considerations relating to transport, urban density and layout, green building, social diversity, mixed-use development and the involvement of the local population.	Ministrie de l'Ecologie du Developpement Durable et de l'Energie (2008)
Eco-Village	An intentional, traditional or urban community that is consciously designed through locally owned, participatory processes in all four dimensions of sustainability (social, culture, ecology, and economy) to regenerate their social and natural environments.	Global EcoVillage Network
Ecocities	A human settlement modelled on the self-sustaining resilient structure and function of natural ecosystems. They provide healthy abundance to their inhabitants without consuming more (renewable) resources than they produce, without producing more waste than they can assimilate, and without being toxic to themselves or neighbouring ecosystems.	Register (2006) and Ecocity Builders
Living Community	Nurturing and generous places that promote healthy lifestyles for everyone; communities that are net positive for energy and water; places that create a positive impact on the human and natural systems that interact with them.	International Living Future Institute (2016)

Certain elements repeat in most of these definitions: neighbourhoods that promote social, ecological, and economic aspects of sustainable development; self-sufficiency in terms of urban metabolism; integrated and synergized systems and infrastructure; communities that are accessible and equitable for all citizens; neighbourhoods that reduce negative impacts on socio-ecological systems and that even produce positive impacts; neighbourhoods that are designed through a participatory process. And Joss et al. (2013) suggest that the eco-district concept is malleable and able to allow for variety in policy and context-specific interpretations. Eco-districts in the context of this dissertation are defined as geographically-bound and self-defined districts that deliberately experiment and innovate in sustainability through a combination of technical (green technology, renewable energy, and integrated infrastructure) and process strategies (community participation, interdisciplinary collaboration, etc.), and that typically engage a wide range of stakeholders.

Eco-districts also require a certain type of process and project management. As Holden, Li & Molina explain, "The governance of such redevelopments emphasizes partnerships, and the integration of knowledge types in a non-technocratic and collaborative manner. The process usually involves some explicit attention to questions of equity and distribution, for the mutual gain of the involved developers, the envisaged new users of the space for living, working or playing, and for the city as a whole." (Holden et al., 2016, p. 11424)

2.2.1. Why the neighbourhood scale?

In many ways, neighbourhoods can be considered an "in-between" scale. Neighbourhoods are small enough to innovate in public policy, governance, and sustainable urban design strategies and to create a certain level of shared understanding of space and context (Berg & Nycander, 1997), but large enough to create important social and ecological benefits that impact the city scale (Seltzer et al., 2010b). They are uniquely positioned to explore the creative integration of different systems. The neighbourhood is also the scale at which land development takes place and new buildings and facilities are proposed, debated, and constructed (Sharifi & Murayama, 2013). Cole (2012), (Sharifi & Murayama, 2014b), and others, argue that environmental and social synergies extend beyond the building-scale for a few reasons. First, it is unlikely that a series of individual 'green' or 'regenerative' buildings will be able to support a sustainable pattern of living. Neighbourhoods, on the other hand, are the scale at which sustainable patterns of living are more easily achieved. Several benefits for employing the neighbourhood-scale as the scale through which to enhance urban sustainability are discussed in the literature:

- Energy, water, and waste all optimize at a scale larger than the individual building – towards the neighbourhood scale (Brockman in L. O'Brien, 2011);
- Neighbourhoods are also the scale at which many social indicators can take form and the minimum scale at which social aspects and economies of scale can take form (Sharifi, 2013, p. v);
- Energy scavenging, grid-connected systems, and district heating make net positive design more achievable at the scale of the neighbourhood than the building (Raymond J Cole & Fedoruk, 2014; Raymond J Cole & Kashkooli, 2013; Sartori et al., 2012);
- The neighbourhood scale is also an effective scale for discussing public space and urban metabolism and the scale at which detailed plans are often made (Hofer, 2009);
- Many municipalities finding it a useful scale at which to plan, deliver programs, and engage with citizens (Federation of Canadian Municipalities, 2013);

- Eco-districts can help contribute to sustainable city initiatives, such as “eco cities”, “liveable cities”, “green cities”, “smart cities,” “low carbon cities,” 100 Resilient Cities, and so forth (Fitzgerald & Lenhart, 2016; Holden et al., 2015; Holden et al., 2016).

Moreover, eco-districts represent opportunities for cities to experiment and innovate with different policies, programs, and strategies that can enhance their sustainability and resilience objectives. As an article in the Paris Innovation Review, “EcoDistricts: a sustainable utopia?” (2013), explains,

> Because what they offer, even in the form of samples, is a real alternative to our productivist city. [Eco-districts] are laboratories. They are kick starting awareness. They seek to be exemplary. They launch a new approach for peri-urban space, an issue that is key to the sustainable city of the 21st century. But most of all – because they offer to improve the quality of life... By combining together, the concepts of “eco” and “district” mutually enrich one another. It has been clearly demonstrated, such a neologism allows to restore the complexity of the totally overused word “eco.” On the other hand, more profound meaning is restored into the word “district”: neighborhood, living together, solidarity, closeness, pride, identity, intensity, density...

While studying the neighbourhood scale certainly does have its advantages, it also poses some challenges in terms of policy and professional practice. For instance, transportation, social policy, taxation, disaster management and waste management are usually dealt with at the city scale and not the neighbourhood scale. Neighbourhood-scale projects are often subject to municipal politics, and progress in one administration can easily be erased after an election. With specific regards to disaster resilience planning, Barroca (2013) highlights the gap in resilience tools at the neighbourhood scale, since a review of tools revealed a preference towards the scale of the city and / or region, pointing to the lack of policy are regulatory focus on neighbourhood scale resilience.[2] On the other hand, energy efficiency, rainwater collection, and thermal comfort

[2] It is important to note, however, that in March of 2018, several municipalities in France signed a Resilient Neighbourhood Charter. This charter represents a purely voluntary commitment that encourages all actors to design neighbourhoods and cities to anticipate the risks of flooding. It is also designed to help actors in the early phases of project development understand issues related to evacuation or how to keep households safely at home in the event of a disaster (DRIEE Ile-de-France, 2018).

are issues usually discussed at the scale of the individual building. The neighbourhood scale may touch on these issues, but it is not the scale at which policies, strategies, and practices are necessarily directed. Oliver et al. (2013) provide a framework for assessing neighbourhood and building scale resilient and regenerative design in post-disaster contexts and highlight the importance of integrating these scales with urban policies and other urban planning initiatives. According to Pearl (2014), the neighbourhood scale is a scale that can equally be part of a theoretical model and an applied solution. Similarly, Da Cunha (2013) argues that neighbourhood-scale sustainability sounds "like a relevant level to collectively experience the mysterious alchemy of moving from words to deeds." (in "EcoDistricts: a sustainable utopia?", 2013) To summarize, the neighbourhood scale is a scale with the opportunity to create tremendous change, yet it is in a policy grey zone, and in some ways, could be considered an "orphan scale."

2.2.2. Criticisms of ecodistricts

Some authors have criticized the eco-district movement for various reasons. The first criticism is that eco-districts can be disconnected from their surrounding urban fabric and create ghettos. Contributing to this argument, French urban planner Thierry Paquot explains, "If the ecodistrict allows synergies within itself, it is not interfering with the outside world and in that, its objectives are futile from the start." (in "EcoDistricts: a sustainable utopia?", 2013) The Paris Innovation Review (2013) adds that eco-districts are "[a]t once detached from a system and permeable to the normal (i.e. harmful to the planet) course of events in the world." The often weak relationship that an eco-district has with its surrounding neighbourhoods is thus a point of contention and criticism. This phenomenon can be observed, for example, in some of France's certified *Label Ecoquartier* eco-districts, where cities invest a great deal into a new eco-district that may be right next to a less affluent neighbourhood that receives no investment from the city.

A second criticism is that eco-districts often fail to take adequately into account affordability. Renowned eco-districts such as Hamarby Stojad in Stockholm and Bo01 in Malmö, Sweden are only affordable for the middle to upper classes and are referred to as green middle-

class enclaves built to meet economic development goals (Fitzgerald & Lenhart, 2016). Harguindéguy and Arias (2009) even go so far as to say that Spanish eco-districts are mere "smoke-screens" that obscure the financing of traditional housing projects that are hardly sustainable. Eco-districts therefore risk becoming neighbourhoods for "bobos"[3] and promoting eco-elitism or environmental gentrification (Paris Innovation Review, 2013; Lenhart & Fitzgerald, 2014; Holden, Li & Molina, 2015). Part of the challenge here is that eco-districts are costly to build, and so dwelling units must sell for a premium. Moreover, the small-town lifestyle with a density of housing and shops inevitably spurs gentrification. Social diversity is thus also a challenge.

A few authors have also criticized eco-districts for spurring new development, rather than focusing on renovating existing neighbourhoods (although eco-districts do not necessarily need to be new developments). Since the 1980s, many eco-district projects have been pursued to *grow and expand* cities, aiming to capture hidden value by transforming underdeveloped land (Holden et al., 2015). The land of many eco-district examples is infill; many eco-districts are built on "greenfield" or "brownfield" sites, and there are few examples of ecodistricts that target revitalizing an existing neighbourhood. For some sustainability scholars, it is a misnomer to call a district an eco-district if it is a new development, when so many existing neighbourhoods and infrastructure need to be revitalized and improved.

2.2.3. Measuring neighbourhood-scale sustainability

So how can one determine if a neighbourhood is sustainable or not? Several authors have attempted to develop metrics or indicators for evaluating neighbourhood-scale sustainability. Early work on urban sustainability indicators includes the work of Alberti (1996), Maclaren (1996) and Churchill and Baetz (1999), to name a few. Alberti suggests three elements for a framework for urban sustainability: key variables to describe urban and environmental systems and their interrelationships; measurable objectives and criteria that enable us to assess these interrelationships, and feedback mechanisms that enable the signals of systems performance to

[3] The term "bobo" is a contraction of the French term, "bourgeois-bohème," or upper-class bohemian. It therefore refers to a socioprofessional class of citizens that are financially well-off, well-educated, left-wing, ecologically-minded, and that want access to culture in the city.

generate behavioural responses from the urban community. Maclaren (Maclaren) provides a structured framework for conducting urban sustainability reporting. She suggests that indicators used for sustainability assessment should be “integrating”, “forward looking” (inter-generational equity), “distributional” (intra-generational equity), and “developed with input from multiple stakeholders” (procedural equity) (p. 186). Churchill and Baetz (1999) develop a set of guidelines for sustainable neighbourhoods that cover a broad range of characteristics, such as population density, urban agriculture, alternative modes of transportation, water re-use and green building techniques. These are but a few examples of urban-sustainability indicators that have started to appear since the 1990s. There now exists a plethora of urban sustainability or neighbourhood-scale sustainability indicators developed by academics, municipalities, and non-profits. In parallel to these indicators exist a series of Neighbourhood Sustainability Assessment (NSA) tools used to evaluate and certify eco-districts, which will be discussed later in this chapter.

2.3 Conceptual Approaches for Sustainable Neighbourhoods

Several different conceptual approaches are useful for studying sustainable neighbourhoods and belong to the broad field of ecological design. These conceptual approaches can be thought of on a continuum from weaker, “less bad” approaches towards sustainable neighbourhood planning to stronger, more positive definitions. This next section reviews several key approaches relevant to the subject of sustainable neighbourhoods: green design, regenerative sustainability & net positive design, urban resilience, and urban ecology & industrial ecology. While green design falls under the umbrella of a technical-rational worldview, the others are multi-dimensional and multi-disciplinary concepts that fall under the umbrella of an ecological worldview or paradigm and are arguably more likely to help lead to a paradigm shift in the built environment (for more on the differences between these two paradigms, please consult **Chapter 3: Theoretical Framework**). It is important to note that that this review of conceptual approaches is considerably more expansive than literature reviews in many publications on eco-districts, which tend to focus only on sustainable development / green design literature. As one of the objectives of this Ph.D. research is to understand the extent to which eco-district pilot projects (and the frameworks tested in them) help shift towards a more

resilient, regenerative paradigm, it is important to review the most promising conceptual approaches to help in this shift in paradigm. Figure 2.3 explains the continuum of weak to strong definitions of resilience and sustainability and the tools and frameworks associated with each definition.

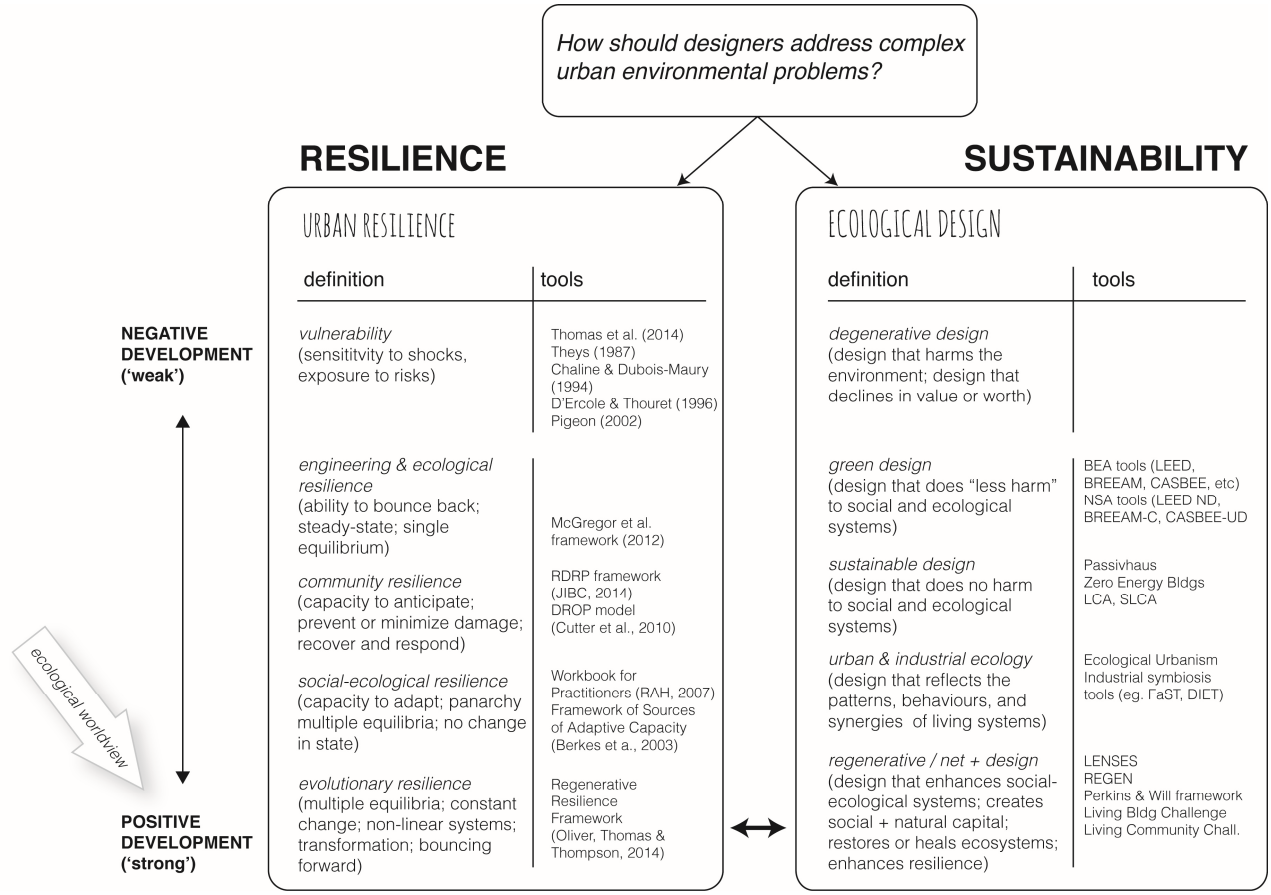


Figure 2.3: The continuum from weak to strong definitions of resilience and sustainability. Source: author, 2014.

2.3.1 Green design: a "less bad" approach

The term 'green *design*' has been used fairly consistently over the past decade or so to emphasize the environmental performance of buildings and "green *building"* to describe those that have a *higher environmental performance compared to that of typical buildings* (Raymond J Cole, 2012). Green design aims at reducing resource use and adverse environmental impacts while simultaneously improving the health and comfort conditions for users or occupants. It may also be understood as a by-product of "sustainable development," a term coined in the Bruntland report to signify "development that meets the needs of the present without compromising the

ability of future generations to meet their own needs." (WCED, 1987) Green design continues to advocate for a development model based on economic growth through resource consumption, but simply one that is more efficient than before. Put differently, it encourages business as usual but in a "less bad" manner (McDonough & Braungart, 2010). Orr (1992) and Van der Ryn and Cowan (1996) explain that green design is based on *technological sustainability* rather than *ecological sustainability.* Technological sustainability promotes technical and managerial solutions and incremental change, whereas ecological sustainability promotes transformational and lifestyle changes (ibid, p. 20-21).

Green design has been criticized heavily by proponents of stronger, more positive definitions of sustainability for several reasons. It is based on reductive and fragmented thinking (B. Reed, 2007) and on creating gradual, incremental change, rather than truly transformational change. Its focus on constraints and limits is uninspiring (Robinson & Cole, 2015). Furthermore, green design in some instances, may be at odds with other approaches, such as resilient design and planning. For example, one should question the validity of recent developments such as examples of écoquartiers in France like the Bassins à Flot[4], developed in flood-prone areas.

One may also question whether green design raises the ethical bar high enough. For instance, does a community of practitioners have a negative duty of avoiding harm ("non-maleficence") or a positive duty ("beneficence") of ensuring that future generations flourish? Should it be satisfied with and be rewarded for designing to code minimum? It is perhaps this set of questions that most fundamentally separates green design from other ecological design approaches, such as regenerative design and net positive development. Whereas green design embodies a lesser ethical standard exemplified by the precautionary principle and the 'moral minimum,' regenerative sustainability calls for a higher ethical standard and may thus be considered a 'virtuous' concept. Similarly, whereas green design asks how design standards can be improved and made more efficient, regenerative sustainability asks how design can have net positive impacts on surrounding communities and how design can heal or restore ecosystems.

[4] The Bassins à Flot project is an écoquartier project located in the Bacalan neighbourhood of Bordeaux, France. The project is located on a 160-hectare site that was redeveloped to be a mixed-use area with workshops, housing, offices, and public services. It is located along the Garonne River and therefore is in a flood zone. According to the City of Bordeaux, 40,000 families in Bordeaux are at risk of flooding from the Garonne and Dordogne rivers and due to the high amounts of impermeable surfaces in the city.

These differences can be illustrated by Russ's notions of weak-side versus strong-side sustainability or Naess (1973) and Devall and Sessions (1985)'s notions of weak ecology and deep ecology.

2.3.2 Regenerative sustainability and net positive development, beyond green

Over the past twenty years or so, and partially in response to the green building movement, more radical streams of ecological design thinking have emerged: notably regenerative sustainability and net positive development. The terms 'regenerative design' and 'regenerative sustainability' may be used interchangeably. These two streams of ecological design thinking have been heavily influenced by the concepts of *deep ecology* (Devall & Sessions, 1985), whole systems thinking (Bateson, 1987; Laszlo, 1994; Morin & Kern, 1999; Morin & Postel, 2008), and virtue ethics and environmental ethics (Berry, 1988; Leopold, 1948; Russ, 2010). As demonstrated in figure 2.2 above, regenerative sustainability is presented in this dissertation as a variation in the evolution of the concept of sustainable design, and not as a separate concept.

"Regenerative design" was first introduced by John Tillman-Lyle (1994), who described it as the process of "replacing the present linear system of throughput flows with the cyclical at sources, consumption centers, and sinks." (p. 10) The concept has evolved from its original focus on purely metabolic issues to, fifteen years later, an argument for design that restores ecological systems, that engages stakeholders from the outset, that enhances resilience, and that creates human and natural capital (Raymond J Cole, 2012; Du Plessis, 2012). Similarly, net positive development as defined by Birkeland (2007;2008;2012) , 2008) is development that increases the ecological base and public estate. In contrast to conventional green building practices, regenerative sustainability promotes an approach that benefits surrounding systems. A 'regenerative' project might produce more energy than it consumes, purify water, air and soil, build institutional relationships outside the project's boundaries, and provide high quality public space for surrounding communities (D. Miller, 2012; Oliver, 2014b). British architect, Peter Clegg, explains that regenerative sustainability asks practitioners "to produce built form and infrastructure that begins to 'heal the wounds' that have already occurred. It moves the bar higher…" (366)

Some key characteristics of regenerative sustainability surface in the literature. First, it emphasizes the importance of the pre-design phase in order to help the design team co-discover synergies and diagnose the potential of a site along its many different dimensions. Regenerative design engages a larger group of stakeholders than in green design; (Mang & Reed, 2012) and (Hoxie et al., 2012) emphasize how regenerative design maintains and solidifies the need to create 'common ground' with diverse stakeholders. 'Place' and 'context' are also at the core of regenerative design, as regenerative design scholars stress the need to look beyond topography and climate at the whole system, including cultural and natural systems and their interactions and a broader range of data than in conventional projects (Hes & du Plessis, 2014; Svec et al., 2012). Regenerative design thus requires a fundamental re-conceptualization of the role and impact of a project within its larger context (Raymond J Cole et al., 2013). Finally, regenerative design scholars question the role and validity of performance and assessment tools, and several of them promote "procedural sustainability," defined as a process of societal negotiation and discussion based on collaborative governance, as a means of operationalizing regenerative design (Robinson & Cole, 2015).

Several prominent regenerative design scholars argue that design should reflect the synergies and symbioses found in nature (Raymond J Cole, 2005, 2012; Raymond J Cole & Pearl, 2007; Hes & du Plessis, 2014; Kapur & Graedel, 2004; Mang & Reed, 2012). Birkeland, for instance, argues that net positive designs must "create synergies and shared spaces for natural and human habitats where possible." (in Hes & du Plessis, 2014) Seltzer et al. emphasize that in sustainable or regenerative neighbourhoods, flows of energy, nutrients, resources, information, financial capital, and cultural resources are localized, integrated, and *synergized*. And (Rey, 2011) notes,

> A sustainable neighbourhood cannot be considered as a closed system and closed in on itself. Through scope and quality, it aims to add value to an urban area that extends far beyond its physical limits. Through its seamless integration with the morphology of its place, it helps build spatial and landscape linkages with adjacent urban areas. In this context, particular attention is paid to the quality of its connections, its complementarities and

synergies – spatial, programmatic and functional – with the surrounding city.[5] (p. 21)

From this perspective, regenerative neighbourhoods find synergies with or provide added benefits for their surrounding communities (Daniel S. Pearl & Amy Oliver, 2013), and they blur spatial boundaries. Some regenerative design scholars argue that regenerative design requires a shift in mindset. For instance, Haggard et al. (Haggard) note, "Regenerative development derives much of its creative power from a fundamental shift of focus, a flipping of paradigms. Rather than seeing a site, or a development project, as a collection of things (slopes, drainages, roads, buildings, etc.), a regenerative designer cultivates the ability to see them as energy systems – webs of interconnected dynamic processes that are continually structuring and restructuring a site." (p. 25)

Critiques of regenerative design focus on a series of practical and operational concerns. Clegg (2012), for example, argues that a "challenge for researchers is to consider whether and to what extent it is feasible to apply the regenerative approach in an urban context, particularly at different scales (city, neighbourhood or building)." (p. 368) Regenerative design may also be criticized on the basis that there is no clear agreed upon definition, a lack of examples of successful regenerative projects, the hefty price tag associated with regenerative projects, and the dominance of peri-urban and rural existing examples. Moreover, practitioners such as Clegg question whether an intensified design process will actually yield better results, and whether the hassle of striving for regenerative projects is worth it in the end. (D. Miller, 2012) questions whether most architects and planners have the skills required to operationalize regenerative design, and even if they did, whether these skills are in demand (p. 19). Finally, the regenerative design support tools that to date have been developed in order to advance the regenerative design agenda appear to be in a grey zone between theory and practice where it is unclear to what extent they are practical and useful for their target audience.

[5] « Un quartier durable ne saurait par ailleurs être considéré comme un système clos et replié sur lui-même. Par son ampleur et sa qualité, il vise à apporter une valeur ajoutée à un périmètre urbain qui dépasse largement ses limites physiques. Par son intégration harmonieuse à la morphologie du lieu, il permet de tisser des liens spatiaux et paysagers avec les secteurs urbains adjacents. Dans cette optique, un soin particulier est apporté à la qualité de ses connexions, de ses complémentarités et de ses synergies – spatiales, programmatiques et fonctionnelles – avec la ville avoisinante. »

Above and beyond the critiques of regenerative design found in the literature, it is also important to comment on the diverse regulatory, economic, political, and technical barriers that hinder its implementation – especially at the neighbourhood scale. Whereas at the scale of the individual building, where there is usually only one client-owner, the aims of regenerative design are feasible if the client-owner has the budget, these aims are very difficult to achieve at a larger scale, where there are likely multiple owners with different interests and questions of responsibility / liability, who pays for what, who manages shared infrastructure, and questions of collective action and political will. These are very real, practical barriers to operationalizing regenerative design at the scale at which it has the most opportunity to create meaningful change. In summary, since regenerative design is a relatively new concept within the long history of sustainable design, there are few relevant urban examples, inadequate knowledge about how to operationalize the concept, and serious questions to be raised about its viability at the neighbourhood scale.

Process elements to retain:
Emphasis on the pre-design phase; Enlarging the sphere of stakeholders; Prioritizing place and context; Blurring spatial boundaries

2.3.3 Resilience – a complementary approach?

In a completely different domain, but still responding to the same problems as regenerative design scholars, the term resilience offers much promise for addressing issues related to climate change, as well as natural and man-made disasters. The term resilience has been around for several decades and may be defined broadly as the capacity to prepare for, respond to, and recover from difficult situations (New York City, 2013); however, the concept of *urban resilience* is quite recent (Pelling, 2003; Vale et al., 2005). 100 Resilient Cities defines urban resilience as “the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.”

Resilience was originally used in the fields of ecology and physics, and in the field of ecology, it gained recognition following Holling's seminal work, *Resilience and Stability of Ecological systems* (1973). Resilience nevertheless is also examined through various lenses, whether through the lens of climate change, political-ecology, social justice or disaster risk-reduction orientation (Vogel et al., 2007).

Similar to the continuum described at the beginning of this section, different generations of resilience definitions can be conceptualized along this continuum from weak-side definitions to strong-side definitions. Earlier and weak-side definitions (*engineering resilience)* emphasized a single equilibrium and bouncing back to an original state. In the second generation of definitions, *ecological resilience* focused on "the ability to persist and the ability to adapt" (Adger, 2003) and acknowledged multiple equilibriums (Davoudi et al., 2012). In relation to the built environment, scholars placed more importance on the idea of spatial scales of resilience, and in particular, the urban or community scales. Finally, the third generation of resilience is more holistic and systemic, focusing on different scales and long-term adaptation strategies and is sometimes referred to as *evolutionary resilience* (ibid). In this definition, "resilience is not conceived of as a return to normality, but rather as the ability of complex socio-ecological systems to change, adapt, and crucially, transform in response to stresses and strains." (Davoudi et al., 2012, p. 302) The evolutionary definition of resilience reflects an ecological worldview and complex systems thinking and in some ways is conceptually complementary to the regenerative design approach. Thus, recent 'positive' definitions stress multiple equilibriums and even the possibility of bouncing forward to a more desirable state (Davoudi et al., 2012; Manyena, 2014; Mertenat & Thomas-Maret, 2009; Oliver et al., 2013; Pizzo, 2015; Rose, 2011; Simmie & Martin, 2010). This is considered a more radical definition of resilience that considers opportunities to develop more sustainably (Maret & Cadoul, 2008), improve infrastructure, diminish vulnerability and address inequalities, increase institutional capacities (Bosher, 2009), challenge existing power structures, and "regenerate," and is also often referred to as the "Building Back Better" approach (Burby et al., 2000; Kennedy et al., 2008; Lloyd-Jones, 2007).

According to the Resilience Alliance, resilience has three defining characteristics: resistance, self-organization, and the capacity for learning and adaptation, and these factors are

echoed by Dauphiné & Provitolo (2007). Folke et al. (2002) add two further characteristics: learning to live with change and uncertainty, and nurturing diversity. Other factors often cited in the literature include: flexibility, redundancy, and optimal network structure (Sterner, 2010); and preparedness, recovery, and transformation (Davoudi et al., 2012). Adaptive capacity is also often cited as an attribute of a resilient system or community (Folke et al., 2002; K. O'Brien, 2012) and is often defined as the ability to adapt to and cope with difficult situations. The International Panel on Climate Change (IPCC) defines adaptive capacity as "the ability or potential of a system to respond successfully to climate variability and change." (IPCC, 2007, p. 727) And finally, adaptation and mitigation are often seen as elements necessary to the resilient functioning of a system.

Resilience, nevertheless, has received its fair share of criticism. Scholars such as Alexander (2013), Brand and Jax (2007), White and O'Hare (2014) and Evans and Reid (2014) argue that it is nothing more than an ill-defined buzz word. Similarly, Lizarralde et al. (2017) argue that the multitude of representations and approaches towards resilience (for example a proactive approach that favours disaster prevention and risk reduction vs. a reactive approach that reduces and mitigates the impacts of disasters) points to the lack of a clear conceptualization of the term. Other authors argue that the engineering metaphor is inappropriate for the domains of urban planning and architecture, since it is absurd for a society to bounce back to a pre-disaster state after a disaster (Lizarralde et al., 2017). White et al. warn that resilience can be misappropriated to justify a neoliberal agenda where governments walk away from their responsibilities, and the most poor and vulnerable populations bear the burden. As well, it is unclear from the literature whether resilience is a desirable outcome or a process. Cynics might therefore wonder whether resilience is simply an elusive concept.

Operationalizing resilience is also presented as challenging in the literature. Carpenter and Gunderson (2001), for instance, ask: resilience for whom and to what? One could add: resilience at what scale? How does one evaluate and measure resilience or determine whether a society or community has reached a resilient state (Lizarralde et al., 2017)? And finally, what tools, policies, and practices can help communities become more resilient and adapted to climate change?

Resilience is a concept that is becoming unavoidable in urban planning. As almost all cities around the world are experiencing the effects of climate change and variability, it is becoming more and more important for cities to anticipate future shocks and stresses, to educate citizens, to build capacity, and to adapt. However, in reality, it is difficult for many cities to find the budget to invest in resilience measures given the uncertainty of future changes and events. Often, cities will only find the budget to invest in resilience after there has been a disaster. It might be difficult for politicians to justify expenditure on preventive and adaptive measures when interest groups will always prioritize other agendas (whether these be affordable housing, public transportation, social programs, education, etc.). Only a handful of cities around the globe are able to gather the political will, collective action, and resources necessary to invest in a resilient future. See for example those cities that have signed on to the 100 Resilient Cities initiative launched by the Rockefeller Foundation. On the other hand, the concept of resilience also can provide cities with important opportunities – opportunities about *how* to plan in the face of uncertainty and climate change, *how* to build capacity and educate the population about change, and *how* to appropriately respond and adapt. An important question for cities and professionals in built environment disciplines is how to link resilience to other important architecture and planning questions like sustainability, equity, and affordability.

Process elements to retain:
Fostering resistance, self-organization and adaptive capacity; Increasing institutional capacities; Diminishing vulnerabilities; Challenging existing power structures; Building Back Better; Preparing for future conditions

2.3.4 Urban ecology & industrial ecology

Urban ecology and industrial ecology are two other conceptual approaches that can be applied to sustainable design and planning, again promoting whole systems thinking and an ecological worldview. Urban Ecology is a growing field that aims to understand the links between human processes and ecological processes in urban areas (Alberti, 2008). Alberti explains: “Cities and urbanizing regions are complex coupled human-natural systems in which people are the

dominant agents. As humans transform natural landscapes into highly human-dominated environments, they create a new set of ecological conditions by changing ecosystem processes and dynamics." (Alberti, 2008) Like regenerative design, urban ecology views the city as a living system, a hybrid system that is influenced by both social and biological processes (ibid). It too draws from several different disciplines (ecology, economics, geography, landscape ecology, and urban planning) and from systems thinking. Aspects of urban ecology may be complementary to the regenerative approach, since both highlight the health and flourishing of socio-ecological systems. There exist several different approaches to urban ecology, ranging from urban nature (the study of natural elements in urban settings) to the urban metabolism (the study of flows of energy and materials in cities).

Quite similar to the urban metabolism concept is the concept of industrial ecology. Garner and Keoleian (1995) define industrial ecology as "the study of the interactions between industrial and ecological systems; consequently, it addresses the environmental effects on both the abiotic and biotic components of the ecosphere." (p. 5) In the field of Industrial Ecology, industrial symbiotic relationships mimic the biological symbiotic relationships found in nature, where unrelated species exchange materials, energy, or information (M. Chertow & Ehrenfeld, 2012) and turn waste at one point in a value chain into inputs at another point in a value chain (Mathews & Tan, 2011). Industrial symbiosis consists of place-based exchanges (materials, energy, waste, water) among different entities – usually businesses. By working together, businesses strive for a collective benefit greater than the sum of individual benefits that could be achieved by acting alone. "The keys to industrial symbiosis are collaboration and the synergistic possibilities offered by geographic proximity," explains (M. R. Chertow).

In terms of neighbourhood design, the most common example used in Industrial Ecology is the eco-industrial park – an area or neighbourhood of collocated firms that shares streams of resources to enhance their collective efficiency (ibid). This phenomenon is commonly referred to as 'industrial symbiosis' or 'by-product synergy.' In terms of energy flows, heated water or steam may be used by factories (or between factories or buildings) in an energy-cascading fashion, or heating and cooling can be shared between buildings in an integrated network. Similarly, in terms of material flows, waste products from one place may be a resource for another place (ibid).

Several Industrial Ecology scholars outline the inputs and outputs that make up the built environment's 'complex system:' fuel, food, and water, and other passive inputs include heat and air (Decker et al., 2003). The industrial symbiosis approach is in many ways complementary to the metabolic ideas put for by regenerative design scholars. However, it has only been developed to deal with metabolic components of a neighbourhood and does not touch the areas of public space, social cohesion and diversity, transportation, and so on. Nevertheless, the way in which industrial ecology frameworks require multi-stakeholder collaboration and focus on flows and closing loops is something that separates them from many frameworks discussed in this chapter. How practitioners – in the case of Industrial Ecology, usually engineers – problem-solve to find synergies and opportunities for closing loops and sharing resources is often done through special flows-based tools or software.

Urban ecology and industrial ecology are perhaps finding more success than regenerative sustainability and resilience in the sense that they might be easier to achieve. They may be less politically charged concepts. Moreover, in the case of industrial ecology, it is often private partners who find mutual interest in sharing and reusing by-products. In fact, the Kalundborg eco-industrial park began simply by business leaders being present in the same room and realizing that they could benefit from one another. They did not need politicians or residents involved for what they had in mind. Other sustainable neighbourhood initiatives that touch the public realm and/or municipal infrastructure arguably face more obstacles. But what design and planning processes assist in conceiving these symbiotic districts?

Process elements to retain:
Whole-systems thinking; Understanding links between human processes and ecological processes; Finding synergies; Inderdisciplinarity; Closing loops

2.4 The design process: from conventional to collaborative models

Much as the previous section described different conceptual approaches to sustainable neighbourhoods that range from weak-side to strong-side definitions of sustainability, this next

section reviews definitions and types of design and planning processes that may stem from or may complement the conceptual approaches described in section 2.2.

In the area of sustainable neighbourhood design and planning, the discussion of the design process is oddly lacking from the literature. Instead, the literature remains focused on indicators (Alberti, 1996; Maclaren, 1996), exemplary projects (Barton, 1998; Churchill & Baetz, 1999; Swilling & Annecke), and frameworks and tools (About-de Chastenet et al., 2016; Berardi, 2013; Lin & Shih, 2018; Reith & Orova, 2015; Sharifi, 2013; Sharifi & Murayama, 2014b; Siew, 2014; Yoon & Park, 2015). It is argued here, however, that it is equally important to understand the design and planning processes used in sustainable neighbourhood projects. For example, what was the time frame? What policies, plans, or planning frameworks aid or inhibit sustainable neighbourhood planning? Who needs to be at the table and how do decisions need to be made? What design and planning processes foster integrated and synergistic solutions to help meet the goals of regenerative and resilient planning? What governance models support sustainable neighbourhood projects? This next section reviews what is meant by the design and planning process in relation to sustainable neighbourhoods and sheds light on some important knowledge gaps.

Broadly speaking, a design process is the system of breaking up a project (building, neighbourhood development or redevelopment, master plan, etc) into several manageable steps. In architecture, the five typical stages in the design process include: schematic design, design development, construction documents, bidding, and construct administration (Brown et al., 2009), which are depicted in figure 2.4.. What is not included in this typical design process is the pre-design phase on the front end and operations and management at the back end.

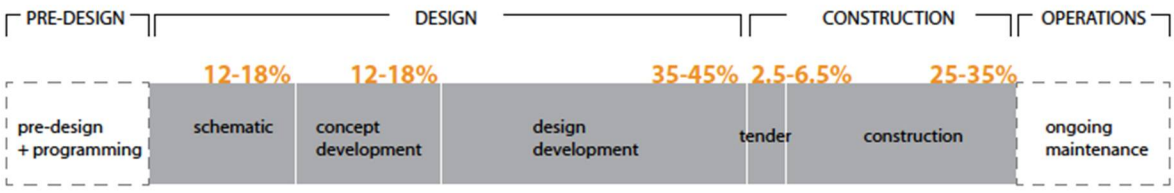


Figure 2.4: Typical architecture design process. Source: Pearl & Oliver, 2013. Based on Canadian Handbook of Practice, 2009. The percentages above the timeline indicate the percentage of time spent on each phase. For instance, 12-18% of the design process is typically spend on schematic design.

In urban planning, however, the breaking up of a project into typical phases is much less evident, since every project and the actors and politics involved, are so different. As Briassoulis explains, “Planning is bounded by constraints that are frequently politically structured.” (p. 411) The political nature of urban planning implies that its elements and process are not fixed, but they change as socio-economic circumstances and contingencies change. Finally, several urban planning “modes” exist, which can be chosen based on the type of planning problem, the type of decision-making environment, and the intellectual traditions of the contributing disciplines in a given project (ibid). Nevertheless, Wallbaum et al. (2010) distinguishes between the strategic planning stage, the initial studies that then take place, the project planning, the competition, and the realization of the project in the field of planning and design (Huang et al., 2004). As is the case in the early phases of a building, “[d]uring the strategic planning stage and the initial studies in particular, there is considerable potential to ensure that sustainability criteria are firmly embedded in the project” (Baycan-Levent & Nijkamp; Hermelin). However, as Walbaum notes, especially in this phase, “instruments for the inclusion of sustainability criteria are rare.” (Wallbaum et al., 2010)

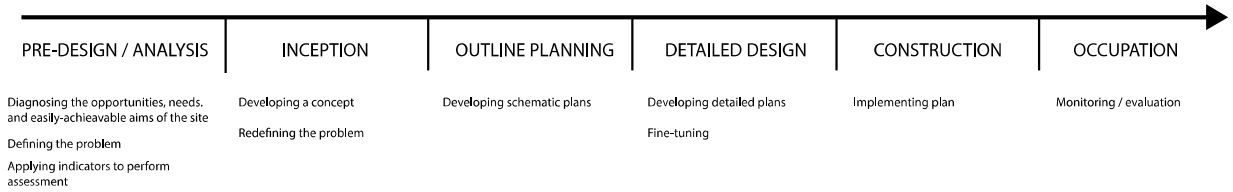


Figure 2.5**:** Phases in an urban planning project (a simplification). Source: author.

Conventional design processes in architecture can be described as more or less linear, distinct and segregated with knowledge gathered on an as-needed basis in a context of siloed knowledge and expertise, rather than in a context of constructive co-learning (Jayasena & Senevirathna, 2012; Leoto et al., 2014). Broad stakeholders are not necessarily involved in the design / planning process, or if they are, they are often consulted on a proposed plan, rather than directly influencing the plan from the outset. Traditional methods do not adequately engage all stakeholders, foster a shared vision, and ultimately, are not effective in encouraging the long-term stewardship of a project to enable its success and maintenance over the long haul. In typical building design projects, either the design deliverables of each specialty are prepared separately

by several professionals or firms assembled at an advanced stage of the process (typically just before initiating construction) or firms may opt to bring in one or two key specialists at the end of the design phase. In this context, meetings between professionals occur almost exclusively for coordinating purposes (Raymond J. Cole et al., 2008), but typically not for the pre-design phase when the design team carries out a profound diagnosis of the site or context in question. In practical terms, the traditional separation of different specialties (such as architecture, landscape architecture, interior design, acoustic design, and so forth) in the design process imposes limits to the integrated and synergistic design strategies aspired for by regenerative sustainability approaches. This outdated model of practice inhibits the full sustainability and resilience potential of projects – whether at the building or neighbourhood scale – and it is becoming increasingly recognized in architecture and planning arenas that new processes, as well as instruments and tools, are needed to help in the various project phases. Conventional design processes may be used for green buildings or green neighbourhood projects; however, the other conceptual approaches explored in section 2.3. are all multi-dimensional, multi-disciplinary concepts that require tighter collaboration and integration between stakeholders.

2.4.1 The Integration Design Process: collaboration early on

In contrast to the conventional fragmented and siloed design process, the Integrated Design Process offers more promise for sustainable building. IDP is a relatively new approach to design and planning (Cucuzzella, 2011), so understandably, definitions vary (Busby Perkins & Will & Stantec, 2007; Hansen & Knudstrup, 2005; Larsson, 2004; Löhnert et al., 2003; Zimmerman & Eng, 2006). Common threads in these definitions, nevertheless, exist. Busby, Perkins & Will (2007) explain that while the project team structure on a conventional project is hierarchical, the project structure on an integrated team is interlinked. While on a conventional project, each design team member works individually to optimize the process as a whole or at least their part of the project, in IDP, ideally all stakeholders work together throughout the entire design or planning process, and from a very early stage. IDP is “a participatory process that brings together interdisciplinary experts and key stakeholders through intensive work sessions (dubbed design “charrettes”) during the whole project design phase.” (Leoto et al., 2014) IDP is also sometimes

used in more urban-scale projects, especially when architecture firms are involved in the planning. The main purpose of IDP is to provide the space for dialogue, and for each stakeholder to speak his or her mind. Several characteristics of IDP may be identified and are described in Table 2.2. below.

Table 2.2.: Characteristics of an Integrated Design Process. Source: author.

Principle	Definition	References
Flexible	A flexible method, not a formula	(Busby Perkins & Will & Stantec, 2007)
Iterative	Allows for new information to inform or refine previous decisions; not a linear silo-based approach; no preordained sequence of events	(Zimmerman & Eng, 2006) (Busby Perkins & Will & Stantec, 2007)
Decisions influenced by broad team	Attitude of inclusion and collaboration; broad collaboration team; careful team formation	(Busby Perkins & Will & Stantec, 2007)
Multi-stakeholder engagement	All of the individuals involved in the conventional design process (architect, engineers, building contractor, client) are involved from the start of process, as are stakeholders who are not traditionally involved, such as ecologists, botanists, hydrologists, artists, and anthropologists	(W. Miller & Buys, 2012)
Process and outcome driven	Well-defined scope, vision, goals and objectives; balanced with team building and a good process	(Busby Perkins & Will & Stantec, 2007)
Continuous learning and improvement	Iterative process with feedback loops; post-occupancy evaluation and comprehensive commissioning whenever possible	(Busby Perkins & Will & Stantec, 2007)

At its core, IDP is based on the notion of *transdisciplinary collaboration.* Some authors argue that IDP is a prerequisite for sustainable design and planning (Forgues & Koskela, 2009; Van der Ryn & Cowan, 1996; Zimmerman & Eng, 2006). In fact, Van Der Ryn and Cowan (2007), in their esteemed book *Ecological Design,* claim that the most powerful technique for sustainable design is the integrated design process because it marks an important shift from compromise (in conventional projects) to true collaboration. It is important to note here that IDP usually refers to the collaboration between professionals from different disciplines, but not necessarily the participation of local communities. An Integrated Design Process (IDP) is thus compatible with the aims and aspirations of regenerative sustainability, urban resilience, urban ecology, and

industrial ecology. Figure 2.6 illustrates the differences between a traditional design process and an integrated design process. The x axis shows the different phases in the design process and the y axis shows the different stakeholders involved. While the traditional design process featured on the left shows different stakeholders being involved at different moments of time, which usually do not overlap, the IDP process shows involvement of all stakeholders from beginning to end of a project. While there is not enough time to elaborate in detail here on all of the challenges of implementing IDP, obvious challenges include getting all stakeholders to agree on project priorities, getting them to speak the same language, and getting them to co-create rather than each 'expert' contributing pieces of information from his/her domain of expertise.

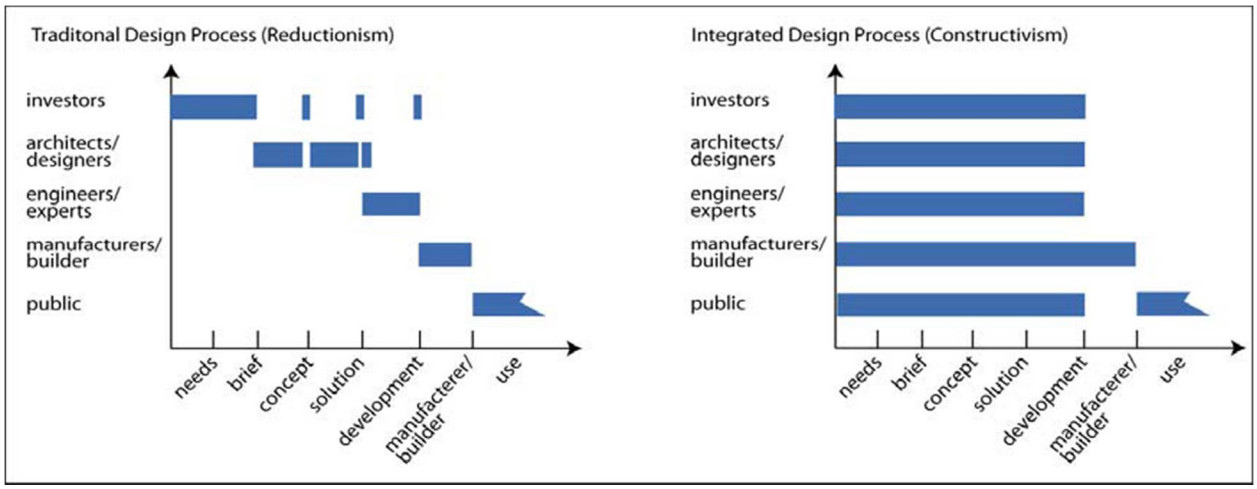


Figure 2.6: Comparison between the level of involvement of stakeholders in traditional and integrated design processes in architecture projects. Source: Cucuzzella, 2011. Published with permission.

While project teams using an Integrated Design Process or a collaborative planning process may frequently use indicators or set targets to track progress on their projects, it remains uncertain what types of tools and when will best help in sustainable neighbourhood projects. Later on in this chapter, the advent of *process-based tools,* otherwise known as 'design support tools,' will be discussed. These tools have largely been developed by proponents of regenerative sustainability, which, similar to IDP, stresses stakeholder engagement, community participation, dialogue, and holistic approaches to the built environment. What is missing from the literature is an understanding of how *process-based tools* aimed at stakeholder collaboration and a fair process are different from an integrated design process, or how these tools can enable, improve,

or complement an integrated design process. In fact, how *process-based tools* impact the design process in sustainable neighbourhood projects at all remains unclear.

2.4.2 The regenerative design process

Several authors who are proponents of the regenerative sustainability paradigm (described more in detail in section 2.4.3) describe the characteristics of an entirely different type of design or planning process to the conventional one, or even IDP, described above. According to these authors, a regenerative design or planning process entails the collaboration of professionals and divergent stakeholders (in integrated, interdisciplinary teams) throughout the whole planning process. The sphere of engagement is broadened from IDP to include a wide range of interest groups (experts, community members, non-profits, business interest groups, local governments, etc), and participants with different perspectives, including non-traditional stakeholders (Mang & Reed, 2012; Robinson & Cole, 2015). In this sense, stakeholder engagement and community participation are absolutely key to creating regenerative and resilient projects. In fact, local communities ideally are engaged from the very beginning to help define what regenerative sustainability and resilience mean in their communities, rather than being consulted on a project that has already been more or less defined.

A key principle that guides the planning process in the regenerative sustainability paradigm is developing a "story of place." (Mang & Haggard, 2016; Mang & Reed, 2012) This implies that the integrated planning team, alongside the community, look at a project very holistically, with a range of indicators or 'flows' of a particular place, and they let the context guide their work. This is sometimes referred to as a systems-based approach. Thus, the content of what is studied is much more extensive and time-consuming than in a conventional project, and much more emphasis is placed on the pre-design and early design phases (frontloading the project).

An important element of developing a story of place is the blurring of spatial boundaries; the planning team considers what is outside the site's official boundaries to see how the project can benefit surrounding systems and have net positive impacts. It thus focuses on the greatest potentials, rather than lowest-common denominator solutions, and asks – how can this project

be a catalyst for positive change in the place in which it is situated? Professionals on the design or planning team may also find that their role shifts to that of a facilitator, helping to maintain ongoing dialogue throughout the project, in a process that is iterative, and not at all linear. Within this iterative process, the integrated planning team and other stakeholders engage in collective learning or co-learning and together, they co-produce results.

This learning is also 'reflexive' and 'double-loop' (Argyris, 2002; Argyris & Schon, 1996), meaning that stakeholders continually experiment, reevaluate their actions and adapt their responses in order to absorb and reapply lessons learned. Single-loop learning requires using the same thinking to solve problems as the thinking that makes the problems in the first place. Double-loop learning, on the other hand, requires taking a step back and questioning the assumptions, values and beliefs behind a problem. This requires an additional layer of problem-solving. Heifetz et al. (2009) provide an interesting distinction between "technical" and "adaptive" challenges. In a technical challenge, it is easy to define the problem and to find a solution, and this problem definition and solution may come from an authority figure. Technical solutions may only require single-loop learning. Adaptive challenges, on the other hand, require learning both for defining the problem and finding the solutions. Moreover, different stakeholders must usually learn together in order to solve these problems. Adaptive challenges will probably require double-loop learning. In this way, stakeholders understand and confront obstacles, and learn from these obstacles and trials in the process.

The regenerative design process is most likely to be used to fulfill the aims of the regenerative sustainability approach; however, aspects of the regenerative design approach could also be transferred to urban resilience, urban ecology, and industrial ecology. While the regenerative design process seems to be a very promising approach to lead to meaningful change, it is often difficult to convince clients to adopt this approach, since it takes adds considerable time and human capital early on in the project. Table 2.3 elaborates on the various characteristics of a regenerative design and planning process, drawing on key sources from the regenerative design and net positive development literature.

Table 2.3 Characteristics of design and planning processes within the regenerative sustainability paradigm. Source: author.

Principle	Definition	References
Collaboration	The work between project professionals and various and divergent stakeholders or stakeholder groups to solve complex, sometimes 'wicked,' problems. Collaboration does not necessarily involve community participation, although it can.	(Forester, 1993) (Healey, 1998) (Innes & Booher, 2010) ((Lizarralde et al., 2011) (EcoDistricts, 2013) (Joss, 2015)
Interdisciplinarity teams	An issue is approached from a range of disciplinary perspectives and integrated to provide a systemic outcome.	(Balsiger, 2004) (Raymond J Cole, 2005) (Morin & Postel, 2008) (Urban Ecology Agency of Barcelona, 2014) (Lawrence & Després, 2004) (Després et al., 2011)
Stakeholder engagement / public participation	Inclusion of a broad range of interest groups (experts, community members, non-profits, local government, etc.) and participants with different perspectives, including non-traditional stakeholders; shift in the balance of power; more horizontal and less hierarchical organization	(Innes & Booher, 2010) (Arnstein, 1969) (Mang & Reed, 2012) (Robinson, 2004) (Hoxie et al., 2012) (Raymond J Cole et al., 2012) (Joss, 2015) (Mang & Haggard, 2016)
Designing from place	Emphasis is placed on designing to fit the local cultural, climatic, economic, and social context, which is understood or "mined" in depth by the planning team before starting on the drawing board. How do local people describe and express place?	(Haggard, 2002) (W. Miller & Buys, 2012) (Mang & Reed, 2012) (Daniel S. Pearl & Amy Oliver, 2013) (Mang & Haggard, 2016)
Understand underlying patterns	Pattern literacy involves scanning information from different disciplines in order to generate meaning. This can involve understanding how the physical landscape is structured, how biological systems function, and how human systems are organized.	(Mang & Haggard, 2016)
Ongoing dialogue	Continuous, frequent interaction occurs between different stakeholders involved in the project. The conversation is ongoing.	(Raymond J Cole, 2012) (Mang & Reed, 2012)
Iterative process	The process is not linear, but iterative, with continuous learning and questioning from the different stakeholders.	(Daniel S Pearl & Amy Oliver, 2013)
Systems-based approach / Holistic focus	The context is approached very holistically, and a wide array of indicators are examined in order to uncover the "story of place." Planning teams may focus on 'flows,' rather than static results in a "systems-based approach."	(B. Reed, 2007) (Daniel S. Pearl & Amy Oliver, 2013) (Mang & Reed, 2012) (Urban Ecology Agency of Barcelona, 2014) (Van der Ryn & Cowan, 1996)
Facilitation	Professionals may see their traditional role shift from being an 'expert' to being more of a 'facilitator' of different stakeholders and helping other stakeholders develop their own capabilities.	(Tainter, 2012) (Mang & Haggard, 2016)
Collective learning	Different stakeholders learn together and from one another in a co-evolutionary process to co-produce results (sometimes referred to as co-learning).	(Waldron et al., 2013) (Robinson & Cole, 2015) (Fitzgerald & Lenhart, 2016)
Reflexive or adaptive learning	The practice of shifting mental models in order to solve complex problems and of experimenting, revaluating, and adapting responses in order to absorb and reapply	(Schon, 1984) (Kolb, 2014) (Argyris & Schön, 1978) (Dieleman, 2013) (Fitzgerald & Lenhart, 2016)

	lessons learned. Understanding and embracing obstacles in the process, and learning from these obstacles.	
Enabling stewardship and appropriation	Community members or eventual end-users participate in the long-term duration of the project, including in its ongoing maintenance, to see that the project lives on once the experts are finished their work on the project.	(Robinson & Cole, 2015) (Mang & Haggard, 2016)
Frontloading / focus on early design phases	More attention is focused in the early phases of the project to mine for the dormant inherent potential of the site or context.	(Daniel S. Pearl & Amy Oliver, 2013)
Blurring boundaries	The planning team considers what is outside the site's official boundaries to see how the project can benefit surrounding systems and have net positive impacts.	(W. Miller & Buys, 2012) (Daniel S. Pearl & Amy Oliver, 2013)
Focus on net positive outcomes	Planning teams focus on the greatest potentials rather than lowest-common denominator solutions. The planning team and other stakeholders strive for win-win scenarios and ask – how can this project be a catalyst for positive change in the place in which it is situated?	(Raymond J Cole, 2012) (Waldron et al., 2013) (Birkeland & MyiLibrary Ltd., 2008) (Mang & Haggard, 2016)

Now that the differences between conventional design processes, Integrated Design Processes, and regenerative design processes related to green design, regenerative design, urban resilience, urban ecology, and industrial ecology have been explored, it becomes important to understand the neighbourhood-scale tools and frameworks associated with these conceptual approaches. This next section will therefore review the array of neighbourhood-scale sustainability tools and frameworks on the market, distinguishing between first- and second-generation frameworks, and between product-based and process-based frameworks.

2.5 Neighbourhood-scale sustainability tools and frameworks

While green building tools have been around for a few decades now, neighbourhood-scale tools and frameworks have only started to appear in the past fifteen to twenty years or so and have developed largely in part because of the recognition that building-scale change is inadequate for reaching global sustainability goals (Berardi, 2011; Cole, 2011; Conte & Monno, 2012; (Häkkinen, 2007). Bird notes, "Although there is a high demand and attention paid to green buildings, these building assessment tools have demonstrated to be insufficient to guarantee the sustainability of the built environment, with respect to the social, environmental, and economic spheres of sustainability." (p.3) Most neighbourhood-scale tools were born out of an expansion

of building-scale tools, rather than developing them from the ground up, and can therefore be referred to as 'spin-off' tools (Sharifi & Murayama, 2013). In parallel, neighbourhood-scale tools originating from the disciplines of urban ecology, industrial ecology, disaster management and regenerative design have also been developed in the hopes of creating sustainable, regenerative, or resilient neighbourhoods. A "tool" here can be generically referred to as an instrument for aiding member of the planning team in sustainability diagnosis, assessment, or process (sometimes alongside the community).

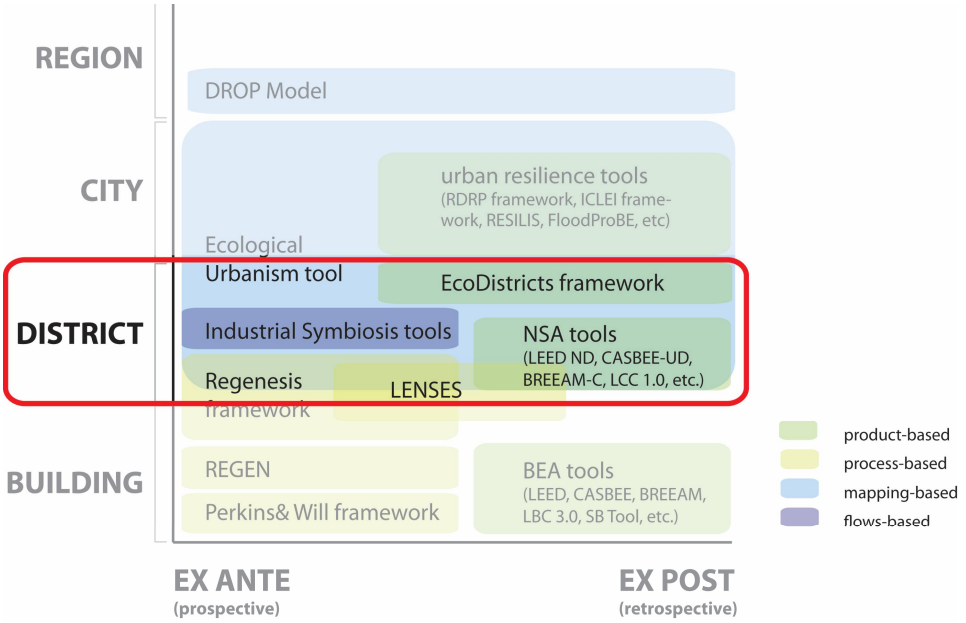


Figure 2.7: The landscape of sustainability tools along spatial and temporal axes. Source: author. The diagram shows three pieces of information: the spatial scale of the tool (y-axis), when the tool is used (x-axis), and the type of tool (see colours in legend). Inside the red rectangle, one can see a range of neighbourhood-scale tools; some are product-based used retrospectively and the others (flows-based, mapping-based, and process-based) are used prospectively.

Indeed, sustainable city frameworks and sustainable neighbourhood frameworks seem to be very much at the vanguard. A variety of actors, including non-governmental organizations, professional organizations, and government agencies, have developed sustainability indicators, frameworks and assessment tools. A comprehensive list of 43 sustainability assessment frameworks can be found in "Eco-City Frameworks – A Global Overview", of which 35 were released since 2010 (Joss & Tomozeiu, 2013). At the same time, "neighbourhood-scale planning has become a focus of Canadian efforts nationally, with the Federation of Canadian

Municipalities focusing Green Municipal Fund resources at that scale and many municipalities finding it a useful scale at which to plan, deliver programs, and engage with citizens." (Bird, 2015)

Classifying neighbourhood-scale sustainability frameworks and tools

Some authors (Holden et al., 2016) argue that there have been at least two generations of neighbourhood sustainability frameworks and tools. The first generation includes those tools growing directly out of green building tools (such as LEED for Neighbourhood Development, CASBEE Urban Development, DGNB, and BREEAM Communities). The second generation of frameworks has had the opportunity to reflect on the lessons learned from the first generation of frameworks and adjust accordingly (such as the Living Community Challenge and EcoDistricts) (Holden et al., 2016). The first generation of tools are often referred to as Neighbourhood Sustainability Assessment (NSA) tools and represent a first effort at quantifying and standardizing district-scale sustainability. These tools rely on an array of technical and performance criteria that fit within a traditional framing of sustainability that is based on efficiency and that favours environmental criteria over social, economic, or institutional criteria. These are also commonly referred to as performance and assessment tools, but will also be referred to frequently in the dissertation as product-based tools, since they measure and evaluate sustainability *outcomes.* Standing in stark contrast to these performance-based or "product-based" tools are *process-based tools*, which are designed to provide support during the design process and which stress stakeholder engagement and collaboration. Process-based tools are often associated with more regenerative definitions of sustainability (embodying an ecological, rather than technical-rational, worldview) and are sometime referred to in the literature as "design-support tools." They are also sometimes presented in the form of collaborative governance frameworks. Most of these tools (whether product-based or process-based) cover a broad range of categories, from social cohesion, land use and biodiversity, urban morphology, transportation, and sometimes vulnerability to hazards.

Existing neighbourhood tools can be classified in many ways, including the planning phase in which they are used, the scale(s) they address, and the nature of the tool (whether it is an assessment tool, a design support tool, etc.). Ness et al. (2007) provide a framework for

categorizing sustainability tools. The framework is set along a time axes, with tools ranging from retrospective to prospective. On the retrospective end of the spectrum, the authors include indicators, with product-related assessment sitting in the middle, and integrated assessment on the prospective end of the spectrum. Figure 2.4. picks up on this distinction in order to present a landscape of sustainability frameworks and tools. Ness et al. consider integrated assessment tools to be those tools that are used from supporting decisions related to a policy or project in a specific region, many of these tools being based on a systems analysis approach that integrate social and natural elements. Table 2.4 and figure 2.7 below present three different categories of neighbourhood-scale sustainability frameworks and examples of these. Figure 2.8 then summarizes who usually deploys and benefits from them.

Table 2.4. Categories of neighbourhood-scale sustainability tools. Source: author.

Performance-based frameworks: These are "check-list" approaches to creating sustainable communities and are indicator-based and generally aim at issuing a certification. The BREEAM-Communities and DGNB for Urban Districts frameworks, however, include a community engagement component and can therefore be considered to have a process component. **Examples:** BREEAM Communities, CASBEE for Urban Development, LEED for Neighborhood Development, HQE2R, DGNB for Ubran Districts, and the Living Community Challenge 1.0.
Process-based frameworks: These are aimed at engaging stakeholders, sparking dialogue, and illustrating complexity, and are sometimes referred to as "design *support* tools." Types of process-based tools include collaborative governance, partnership, and decision-making frameworks, and so forth. **Examples:** LENSES, REGEN, the Perkins & Will framework, the Regenesis Group Framework, EcoDistricts Protocol, the Rural Disaster Resilience Planning framework.
Hybrid tools / other: Some tools use a combination of the categories above. An example would be participatory mapping tools, which emphasize both mapping and process. Other types of tools include flows-based tools, used especially in Industrial Ecology in order to create industrially symbiotic neighbourhoods that rely on input-output modelling or the abstract mapping of metabolic flows; or mapping-based tools used by design teams to diagnose a context. **Examples:** Facility Synergy Tool, Designing Industrial Ecosystems Tool; district energy modelling tools; the Ecological Urbanism tool (UAEB); and the Disaster Resilience Index, developed by Cutter et al.

Figure 2.8.: Categorization of neighbourhood-scale sustainability frameworks. Source: author.

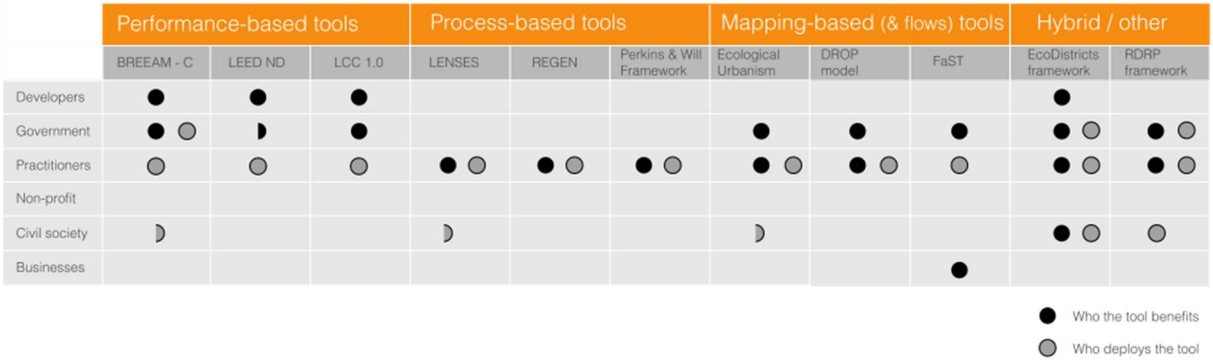


Figure 2.9: Stakeholders deploying and benefitting from design support tools. Source: author.

2.5.1. Performance and assessment-based Tools

Neighbourhood-scale *performance-based tools* (NSA tools) have largely grown from national Green Building Councils, third party organizations such as the International Living Futures Institute and the Building Research Establishment (see BREEAM Communities), and in more exceptional cases, from private engineering and planning firms or agencies such as ARUP or the Urban Ecology Agency of Barcelona (see the Ecological Urbanism tool, an atypical rating tool, since its primary purpose is to be a diagnostic tool, though it can provide a rating as well). They are generally applied by private developers of infrastructure, buildings, landscape designs and master plan developments, by local or state-level governments, and occasionally by organizations working in the public interest (Holden et al., 2016). Holden et al. ponder whether there are implications for the nature and application of sustainability at the neighbourhood scale depending on the organization using the tool, whether it is driven by market interests, public

interests, private interests, or some combination of these. These implications have yet to be made evident in the literature, however.

NSA tools generally use an indicator set with a range of topics based on Smart Growth and New Urbanism principles, including: site or land use, morphology, smart location & linkage, green buildings, green infrastructure, innovation, transportation, energy, water, socio-economic well-being, waste & materials, air quality, and carbon (refer to figure 2.8). Many NSA tools do not include disaster resilience, public participation, governance and other social indicators. In fact, social indicators make up only 9 – 13% of total indicators in mainstream NSA tools, and economic indicators make up only 0.5 – 9 % of total indicators (Oliver, 2014a). Public participation and governance issues are included and required in BREEAM-Communities and DGNB for Urban Districts, but in LEED ND, they only make up one optional credit. Figure 2.10 compares the focus by sustainability issue of three main NSA tools.

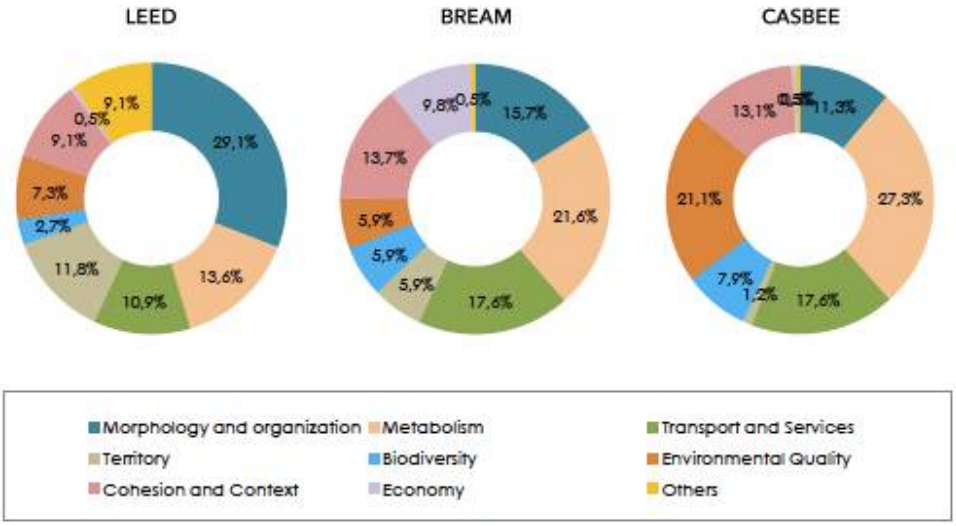


Figure 2.10: Comparison of NSA tools and their content focus. Source: Urban Ecology Agency of Barcelona, 2012, p. 70. Published with permission.

NSA tools are based on the same values, principles and worldview as building environmental assessment (BEA) tools. The conventional language from BEA tools (terms such as "assessment," "rating," "benchmarks," and "performance") has therefore simply been scaled up to neighbourhoods. NSA tools provide a "certification" service by a certification body such as the U.S. Green Building Council or the International Living Future Institute. Here, certification

denotes, “the process by which a third party gives written assurance that a product, process or service conforms to specified requirements.” (ISO/IEC, 2004; Urban Ecology Agency of Barcelona, 2014) Certification involves a normalizing agency, a certifying entity and a certified entity and can be public or private. Sometimes certification can be mandatory (legislated), but usually they are voluntary and an added value to a project. Minimum and maximum benchmarks are often used to guide the requirements. The main NSA tools available today – BREEAM Communities, LEED for Neighborhood Development, CASBEE for Urban Development, and the Living Community Challenge – certify sustainable neighbourhoods on a sliding scale from good to excellent or silver to platinum.

In general, performance or assessment tools can address several purposes including decision-making and management, advocacy, participation, consensus-building, and research and analysis (Seltzer et al., 2010b, p. 112). Briassoulis (2001) explains the four main functions that performance and assessment tools (in particular, their embedded indicators) for urban planners:

(1) description/explanation of the state of spatial systems and its deviation from some reference state;
(2) impact assessment/evaluation of the effect of particular actions on the state of spatial systems and its deviation from some reference state;
(3) prediction of future conditions of spatial systems under various scenarios of socio-economic and environmental change;
(4) monitoring to keep track of changes in the state of spatial systems and to support appropriate corrective actions.

Similarly, Seltzer et al. explain that performance or measurement tools can address several purposes including decision-making and management, advocacy, participation, consensus-building, and research and analysis (Seltzer et al., 2011); however, the performance-based tools analyzed in this section have been specifically targeted to private developers and the planning teams they work with. Certification is costly and usually voluntary but seen as a value-added; thus, these tools are frequently capitalized on to greenwash projects, rather than being used to create meaningful and transformative change.

In terms of the literature, the studies that have been published on NSA tools generally involve a comparison between tools (Garde, 2009; Haapio, 2012; Kyrkou & Karthaus, 2011; Reith & Orova, 2015; Sharifi & Murayama, 2014a; Wangel et al., 2016), the soundness of the

assessment methodology (Komeily & Srinivasan) (AlQahtany et al., 2013; Berardi, 2013; Grace, 2000), and the applicability of the tools to different contexts (Kyrkou & Karthaus, 2011; Säynäjoki et al., 2012; Sharifi & Murayama, 2014b). As neighbourhood sustainability assessment is a new research area, one is left with many unresolved questions. For instance, little is known about whether NSA tools actually enhance the resilience or sustainability of a neighbourhood, or whether they just provide certification and branding for marketing purposes; the information provided for urban-scale assessments and their empirical aspects is still limited (Kyrkou & Karthaus, 2011); few studies concentrate on specific projects and their performance against specific assessment tools; and there is almost no research on Living Communities, since LCC 1.0 was just released only just in the summer of 2014. Moreover, several tensions emerge from the literature on NSA tools: first, whether these tools should be universal or context-specific (Alberti, 1996; Cable, 2008; Kyrkou & Karthaus, 2011; Säynäjoki et al., 2012); whether these tools should be simple checklists or adaptable frameworks (Kyrkou & Karthaus, 2011); and whether they should tackle short-term certification or long-term sustainability (Boyko et al., 2006; Brandon & Lombardi, 2005; Pearl, 2014).

Performance-based tools have also received their fair share of criticism (Birkeland, 2007; Fisk, 2009; Daniel S. Pearl & Amy Oliver, 2013; Ravetz, 2000). They identify discrete performance requirements that often translate into isolated design strategies, rather than design that encourages closing loops, responding appropriately to local and ecological contexts, and exploiting creative and *innovative synergies* (Raymond J Cole, 2012). The format of the tools makes it difficult to find synergies between indicators. They do not address the pre-design phase, and even if they were to be introduced earlier in the design process, the generic checklist approach would still do nothing to help the neighbourhood integrate with the surrounding urban fabric. Other criticisms include: the tools are generic and fail to address local or regional qualities, the criteria and weighting are not selected with stakeholder input and the distribution of responsibilities amongst stakeholders is poorly defined (AlQahtany et al., 2013); and the tools do not adequately stress the social and economic components, disaster resilience or affordable housing. They do not necessarily reflect people's "lived experience" (Seltzer et al., 2010b). Few of them "adequately put people and place at the heart of sustainability assessment systems."

(Bird, 2015)) In essence, they simply are not holistic enough to promote transformational change. Figure 2.11 features a NSA certified district in California. It is difficult to put too much stock into these certified projects, when they clearly support a suburban lifestyle with a large ecological footprint.

Figure 2.11 (left): A house in Presidio, CA – a LEED ND certified district. Source: Presidio Trust (2014). Published with permission.

While it was stated above that NSA tools generally belong to the old paradigm – the technical-rational paradigm, there a few examples of performance-based tools that embody the values of the regenerative design paradigm that have adopted performance and assessment methods as a way of advancing the regenerative sustainability and resilience paradigms. The most prominent example is the Living Community Challenge 1.0, launched by the International Living Futures Institute in 2014. It is ILFI's attempt of scaling up the Living Building Challenge to the district scale. Unlike the other frameworks discussed in this section, LCC 1.0 sets a standard with twenty imperatives that all must be met to receive LCC certification. There are currently no LCC certified districts, so it is difficult to comment on its success. An inherent challenge in the transition from the technical-rational paradigm to the regenerative design paradigm is grappling with the need to have categories, boxes, lists of criteria, and so forth. The new regenerative tools and ways of practicing might take some time to develop, as shedding the 'old' way of doing things cannot happen overnight. Table 2.5. describes the characteristic of performance-based tools with those characteristics of stronger-side sustainability indicated with the light grey background.

Table 2.5 Characteristics of performance-based tools. Characteristics associate with the regenerative sustainability paradigm are indicated in grey. Source: author.

PERFORMANCE-BASED TOOLS		
Characteristic	**Definition**	**References**
Certification	Performance-based tools are designed to certify a project based on a range of sustainability criteria and to provide a project with a rating. This certification can happen at different stages, such as after masterplan completion (see BREEAM-C) or after construction and occupation (see LCC 1.0).	(BREEAM Communities, 2012) (International Living Future Institute, 2016)
Prescriptive by nature	These tools are quite prescriptive. For instance, the Living Community Challenge includes a list of twenty imperatives, all of which must be obtained for full certification.	(Raymond J Cole, 2005) (Raymond J Cole, 2012) (Daniel S. Pearl & Amy Oliver, 2013)
Designed for use *ex post*	Performance-based tools are primarily designed to certify a project *ex post* (after the design and planning processes are complete). Their *modus operandi* is not to guide the planning process itself, although it is inevitable that these tools be incorporate into the design and planning process quite early on.	(Pearl & Oliver, 2014)
Holistic in coverage	Performance-based tools in the regenerative paradigm are very holistic in scope and deal with a wide range of issues. For instance, the Living Community Challenge has seven different themes. The Ecological Urbanism framework has 52 indicators under four themes.	(International Living Future Institute, 2016; Urban Ecology Agency of Barcelona)
Larger targeted audience than traditional performance and evaluation tools	Whereas conventionally, sustainability frameworks have been targeted towards either private developers or governments, some performance-based tools such as LCC 1.0 and Ecological Urbanism also target municipalities and communities. BREEAM-C and DGNB-UD target private developers mainly, however.	(International Living Future Institute, 2016)
Integration of spatial scales	Tools such as the Living Community Challenge acknowledge the complex interaction of different spatial scales that occurs in neighbourhood projects and thus provides for 'scale jumping' in its framework.	(International Living Future Institute, 2016)
Incorporation of community participation criteria	Performance-based tools such as BREEAM-Communities and DGNB for Urban Districts require community participation and creating a consultation plan.	(BREEAM Communities, 2012) (DGNB, 2016)
Net positive criteria	These tools have evolved from the old paradigm to include much more stringent, net positive criteria (such as generating 105% of energy needs on site).	(Pearl & Oliver, 2015) (International Living Future Institute, 2016) (Birkeland, 2008)

2.5.2 Process-based tools and frameworks

In contrast to purely performance-based tools, a few process-based tools and frameworks have emerged in the past decade, such the Swedish CityLab Action framework, the REGEN tool, the Perkins & Will framework, the LENSES framework, and the EcoDistricts Framework (now called the EcoDistricts Protocol). Many of these tools have been put forward by regenerative sustainability proponents, who often stand in opposition to rating tools. Process-based tools take a different approach to district-scale sustainability from performance-based ones and emphasize more *procedural elements* (Robinson & Cole, 2015). They generally attempt to involve the local community and / or engage project stakeholders early in the design process to help support finding integrated design solutions and anchor a strong project vision. Hence, one of their aims is to spark inclusive dialogue. Rather than certifying a project *ex post,* these design support tools and frameworks are used *ex ante,* and therefore may be considered prospective, rather than retrospective, tools. They are not prescriptive and purport to be about discovering the story of a place and the web of interconnected strategies and potentials that exist in that place, and searching for the low-lying fruit of a context (Hoxie et al., 2012). Some of the frameworks are designed to help visualize connections and relationships between the different elements of a project. And finally, in contrast to NSA tools, which were designed for private developers, the regenerative design frameworks discussed in this next section have been developed to benefit *practitioners* (architects, planners, engineers, landscape architects) and non-traditional stakeholders, and ideally can be used during an Integrated Design Process (for more about IDP, please see section 2.3).

While several 'principles' of regenerative design and net positive design have been put forward by various authors (Birkeland, 2008; Lyle, 1994; McDonough & Braungart, 2010; Thayer, 1994; Todd & Todd, 1994), as regenerative design and net positive development are in their infancy, there exist no metrics or common factors for identifying, assessing, or measuring regenerative projects. As Robinson & Cole note, "It is not currently obvious, either conceptually or in practice, how to conceive and measure net-positive outcomes in a number of critical social, cultural or ecological performance areas." (p. 138)

Table 2.6 Characteristics of design support tools within the regenerative sustainability paradigm. Source: author.

DESIGN SUPPORT TOOLS		
Characteristic	**Definition**	**References**
Providing guidance / 'diagnostic' tools	Design support tools are designed to provide guidance and decision-making support throughout the design or planning process for the members of the planning team. They assist the planning team in their 'diagnosis' of the site's opportunities, main issues, potentials, needs, etc.	(Cole, 2012) (Plaut et al., 2012) (Pearl & Oliver, 2014) (Mayhew & Campbell, 2008)
Collaboration and stakeholder engagement	Design support tools are designed to encourage collaboration and stakeholder engagement in the way that they require the various stakeholders to discuss different issues.	(Cole, 2012) (Robinson & Cole, 2015) (Du Plessis, 2012) (Mang & Reed, 2012)
Governance, partnership-formation, team-building	Design support tools may also stress good governance, building partnerships, and team-building exercises that aim at enhancing the planning team's cohesion so that it can maintain momentum over time.	(EcoDistricts, 2013)
Flexibility	Design support tools are quite flexibly and adaptable, and are not at all prescriptive.	(Pearl & Oliver, 2014)
Used *ex ante*	These tools are designed to be used *ex ante* and not *ex post,* meaning that they are designed to be used during the planning process, instead of afterwards.	(Pearl & Oliver, 2014) (Oliver & Pearl, 2018a)
"Thought frameworks"	These tools are "thought frameworks" in that they provoke the members of the design team to reflect on very complex issues, which may require members of the team to operate outside their comfort zone.	(Waldron et al., 2013) (Hes & du Plessis, 2014)
Holistic in coverage	Design support tools are very holistic in coverage, much more so than conventional sustainability frameworks.	(Pearl & Oliver, 2014) (Cole, 2012)
Targeted towards practitioners and non-traditional stakeholders	Whereas conventionally, sustainability frameworks have been targeted towards either private developers or governments, design support tools are targeted primarily towards members of the design team (and the other stakeholders involved).	(Cole, 2012)

Four emerging regenerative design frameworks that are qualitatively different to the performance and assessment tools originating from the green design movement are described in the February 2012 special issue of *Building Research & Information* on regenerative design featured. The range of considerations in this first wave of regenerative design frameworks include the same issues as NSA tools (transportation, land use, energy, water, waste, materials, etc) as well as a host of other issues, including but not limited to education, beauty, financing, ecosystem services, food production, innovation, services (International Living Future Institute, 2016; Plaut et al., 2012; Svec et al., 2012).

A practical criticism of these process-based tools is that many of them have yet to be applied to real-life neighbourhood plans or developments, and so their usefulness is unknown. Other weaknesses may include: there is uncertainty about how to engage non-traditional stakeholders; there is ambiguity about at what spatial scale these tools are meant to be applied; they may be too complex, abstract, inaccessible and unintuitive for practitioners (Daniel S Pearl & Amy Oliver, 2013); and they do not catalyze change for the general population but focus only on the transdisciplinary application of professionals (Moore, 2014). This last point is important, as the regenerative design literature emphasizes stakeholder engagement and broad inclusivity, yet the first generation of regenerative design frameworks (those in the BRI special issue) appear geared mainly towards professionals and exclude such broader participation. None of the current frameworks address all the key conceptual elements of regenerative design (stakeholder engagement, emphasis on the pre-design phase, importance of place, and importance of process). And, it is unclear how these *process-based tools* do in fact impact the design process for members of the design team and other stakeholders. How effective are they in supporting members of the design team and in doing what they have set out to do? How do they fit within an integrated design process? Are they effective in promoting systems thinking, solving complex problems, and leading to integrated and synergistic design and planning solutions?

2.5.3 Hybrid / other tools for sustainable neighbourhoods

Of course it is an oversimplification to say that the only two types of neighbourhood sustainability frameworks are product-based and process-based. Those represent a very large percentage of frameworks, but there also exist other tpes, such as mapping-based nad flows-based frameworks. Mapping-based tools use GIS or other software to map indicators. Compared to the other types of tools explored in this paper, mapping-based tools are very useful for understanding a neighbourhood's spatial qualities. They are also useful for understanding how a site relates to its surrounding context. Mapping-based tools are not discipline-specific and thus can be used by a broad range of professionals. While mapping indicators decreases complexity and communicates information effectively, indicators may also involve difficulty in validating

results, problems aggregating scales, subjective selection and weighting, and can replace context-driven analysis (Cutter et al., 2010).

The Ecological Urbanism tool

One very innovative approach is the Ecological Urbanism framework developed by Salvador Rueda and the Urban Ecology Agency of Barcelona. The Ecological Urbanism framework is conceptually innovative in that it conceives of the city as an ecosystem that depends on a balance between compactness, complexity, metabolic efficiency, and social cohesion. It builds heavily on systems theory. The Ecological Urbanism framework – a framework with 53 indicators that can be applied to the city or neighbourhood scale – is a highly flexible framework that can be used by the UAEB to assess a context's current level of sustainability, to evaluate master plans, and to propose new strategic planning directions. The indicators are used at different spatial scales, ranging from regional biodiversity indicators, to city-wide transportation indicators, to neighbourhood scale public space, density, and social cohesion indicators, and the agency frequently uses the metaphor of Russian dolls where the size of each doll depends on the unique features of the doll holding it (UAEB, 2014, p. 3). It is truly unique its ability to capture multiple criteria and multiple spatial scales. However, there is no methodology for putting the indicators together and finding clear design solutions; in fact, this is the Director's primary function in the agency. Thus, this framework and tool are not easily replicable for other professionals.

Flows-based tools

Another type of tool that is more discipline-specific to Industrial Ecology is the flows-based tool, which is specifically used to help design industrially symbiotic neighbourhoods. (G. B. Grant et al., 2010) explain that creating industrially symbiotic neighbourhoods involves several stages, where the first stage is input-output matching. Industrial ecology tools are usually input-output or flows-based and help a design team (usually engineers) diagnose opportunities for metabolically-symbiotic exchanges, a type of symbiotic exchange that aids in promoting positive design. Input-output matching is one tool used to pair inputs and outputs from different

companies in order to make the links across industries. Industrial symbiosis tools were created for practitioners, such as engineers, to solve metabolic problems.

Another flows-based tool that is associated more with the regenerative sustainability conceptual approach, rather than the industrial ecology approach, is the architecture firm SERA's 'Community Resource Mapping Tool' that is part of the firm's Civic Ecology Framework. This flows-based tool is designed to empower citizens to create the systems that will underpin their shared vision. T. Smith (2013) explains, "Facilitated systems gaming empowers citizen designers to create a conceptual circuit diagram of how energy, nutrients, food, water, money and culture can flow toward and throughout the community. From these diagrams, citizens extract projects, some easy wins, others big, hairy and audacious." Figure 2.12 below depicts the flows a community drew in a resource mapping charrette hosted by SERA.

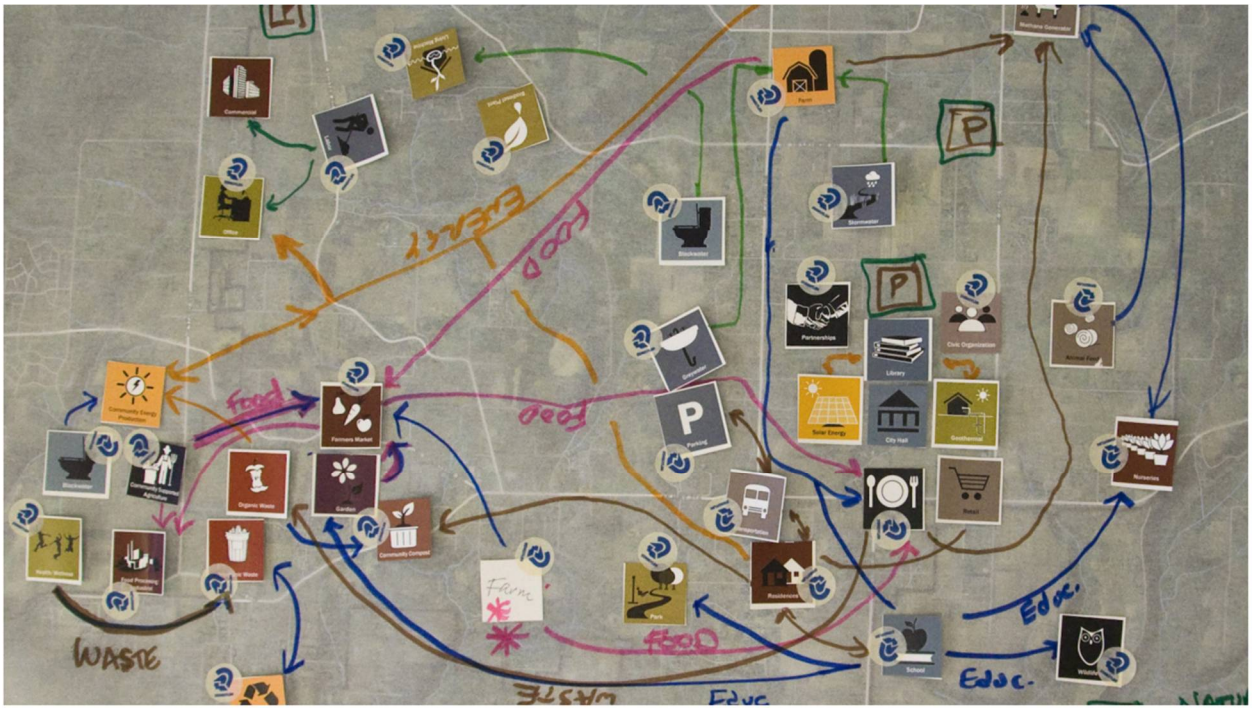


Figure 2.12: SERA's 'Community Resource Mapping Tool.' Source: SERA Architects, Inc. Published with permission.

Flows-based tools are fairly user-friendly, rely on reliable data, and communicate information effectively. Whereas process-based tools are completely abstract and not "situated" within a geographical context, and map-based tools are very situated in a geographic context,

flows-based tools are somewhere in the middle. The tools also foster transdisciplinary collaboration between different kinds of experts, foster creative partnerships between industry professionals, and encourage closing loops, finding synergies, and integrated design solutions. They are also solution-driven and necessarily used in the pre-design phase. Moreover, since not all examples of industrial occur "co-locatively" (i.e. all industry partners are located in the same geographic area or neighbourhood), the tools must engage with larger scales. In some cases the tools can even be participatory, like the Community Resources Mapping Tool, and involve local communities in the planning of their neighbourhood.

Table 2.7 Characteristics of hybrid / other tools. Source: author.

DESIGN SUPPORT TOOLS		
Characteristic	**Definition**	**References**
'diagnostic' tools	Many hybrid / other tools from industrial ecology and urban ecology assist the planning team in their 'diagnosis' of the site's opportunities, main issues, potentials, resource sharing opportunities, etc.	(Urban Ecology Agency of Barcelona, 2014) (Cutter et al., 2008) (Cervantes, 2007)
Interdisciplinary collaboration	Many hybrid/ other tools require interdisciplinary collaboration to solve problems or make a thorough diagnosis.	(M. L. Cadenasso & Pickett, 2008) (M. Cadenasso et al., 2006) (M. R. Chertow, 2000) (Ayres & Ayres, 2002)
Flexibility	Many hybrid / other tools are quite flexible and adaptable, and are not at all prescriptive.	(Cutter et al., 2008; Cutter et al.)
Used *ex ante*	These tools are designed to be used *ex ante* and not *ex post,* meaning that they are designed to be used during the planning process, instead of afterwards.	(UAEB, 2015) (Cutter et al., 2008 ; 2010) (G. B. Grant et al., 2010) (M. R. Chertow, 2000) (Carlson et al., 2003)
Holistic in coverage	Hybrid / other tools are very holistic in coverage, much more so than conventional sustainability frameworks (except input-output matching tools, which only cover urban metabolism issues).	(UAEB, 2012, 2015)
Targeted towards practitioners	Hybrid/other tools are targeted primarily towards members of the design team (such as engineers, ecologists, etc.).	(Carlson et al., 2003) (Ayres & Ayres, 2002)

2.5.4 The 'form' of neighbourhood sustainability tools: does function follow form?

The previous sections described various types of neighbourhood sustainability frameworks and tools, each with its own form and embedded agendas and worldviews. This begs the question of how the form of the tool impacts the design process, and which kinds of tools are

most likely to promote this shift in paradigm towards more integrated, participatory, synergistic models of practice? Cucuzzella (2012) warns that performance-based tools can have an impact on design thinking: "When the evaluation tools are given a very important weighting in the design project, the problem-solving activity may overwhelm the problem-setting activity because of the need to adhere to and abide by the quantitative results of such tools." (p. 15) A professor from Aalborg University with practical and theoretical experience with sustainability tools asks, "How can you use an Excel file?" (professor at Aalborg University, informational interview, 2016) She explains,

> Well you can sit at your desk and stare at a computer screen and write stuff. And you do that by yourself. So in that sense [the checklist approach] materializes a very specific form of practice," and continues, "I think some of the tools in that sense are not very helpful because they are somehow organized in a way that is not doing in the world what they ought to do, to bring along facilitation. So one of the problems with this Excel file is that it is not a facilitative tool, it doesn't do anything. (ibid)

She also warns that the checklist approach can actually change planning practices in a negative way because they can hinder more creative processes. In contrast to the checklist approach, in a project in the Danish city of Roskilde, she was involved in a project where the design team created a planning tool that consisted of cardboard cards with issues to discuss around a table. With respect to this experience, she explains, "I think that was really interesting to see just that different in methodology, or the physical form of the tool actually meant a lot for how it was used, and it was used in a much more creative way through that." (ibid)

However, this last statement is quite up for debate. While performance-based tools are inherited from the old paradigm, they have been adjusted with extremely stringent sustainability targets (such as produced 105% of energy needs on-site in the Living Community Challenge) as well as community participation requirements, in order to better suit the new regenerative sustainability paradigm. There are perhaps two different ways of arguing the answer to these questions.

First, one could question the character of assessment tools and whether they are an appropriate model of tool for regenerative and resilient planning. And this takes us back to the debate concerning performance-based and process-based tools. If one of the core aims of

regenerative and resilient planning is to move towards a more integrative model of practice, are checklists the way to go? However, an entirely different way of framing an answer to the questions posed above is that setting ambitious sustainability targets in the form of a checklist sparks innovation. This, for example, is the approach that the International Living Future Institute takes in its Living Building Challenge and Living Communities standards. ILFI is generally accepted as the most demanding sustainability certification body, and it argues that setting very ambitious targets is what sparks innovation among professionals. From this perspective, BREEAM Communities' checklist character may have sparked innovation in the planning team to create new visual communication tools, which would then assist the team in achieving the ambitious sustainability targets. Figure 2.13 describes these two different perspectives.

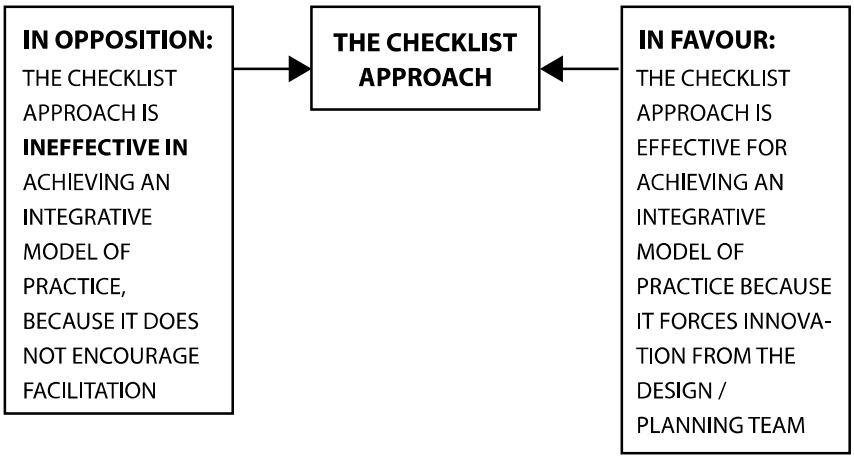


Figure 2.13: Two different points of view concerning the character of checklist-based tools. Source: author.

2.5.5. A knowledge gap in the literature: how product-based and process-based tools impact practice

The problem with *product-based tools* is that they remain trapped within a technical-rational worldview where sustainability and resilience are measured outcomes and thus position sustainability and resilience as a 'product,' rather than a 'process.' For example, many researchers have tried to look at resilience from a quantitative perspective by developing a set of indicators. The same is the case for sustainability (Alberti, 1996; Bird, 2015; Haapio, 2012; Joss, 2015; Luederitz et al., 2013; Maclaren, 1996; Mori & Christodoulou, 2012; Munier, 2011; Sharifi

& Murayama, 2013). While performance-based tools *do* have many advantages – since they allow for tracking progress, for comparing different projects with each other, help spark healthy competition between different municipalities or between different developers in a city, reward sustainability achievements, help cities determine where to concentrate resources, and so forth, they also have their limits. These tools cannot be effective if they exist in a vacuum. It is unclear how these tools are integrated with city-wide policies, frameworks and governance structures; how they help overcome barriers in the planning process; and who they benefit and who deploys them. In essence, this quantitative perspective of sustainability and resilience tends to be divorced from the means of *how* to achieve sustainability and resilience targets.

This lack of understanding the 'hows' of neighbourhood sustainability is discussed in a study conducted by Garde (2009), where the author interviewed developers involved in LEED ND – a voluntary performance and evaluation tool for sustainable neighbourhoods targeted at the private sector – and that revealed that the tool had little bearing on the project outcomes:

> Based on the comments of the 11 respondents providing additional information, it appears that the rating system had very little influence on the planning and design of the projects that applied for certification during the pilot phase. Most of these respondents said that they did not make any changes to the projects to match the LEED-ND criteria. One developer said that this was because many developers were already designing and building projects with "sustainability in mind." (Garde, 2009)

In the same study, another developer explained how he did make changes to the original design in order to meet LEED ND requirements; however, the tool did not impact the design and visioning from the outset. Similarly, an article reflecting on the Danish experience using the DGNB for Urban Districts tool revealed that "[c]ertification has led to only limited changes in the lay-out and design of the areas, because most of the four areas were planned before they entered the certification process. Instead, it has mainly been used to document the degree of sustainability of the projects and highlight strengths and weaknesses in their respective sustainability concepts." (Jensen, 2014) This provides further evidence of the need to understand when tools and which tools are used and how they are used, rather than purely focusing on the nature and weighting of performance criteria.

Performance-based tools generally are introduced late in the design process (since they are usually used to evaluate a project *ex* post) and for this reason, are unlikely to have large impacts on critical diagnoses that impact decision-making. Few frameworks exist to help assist the design team and local actors in diagnosing the synergistic potentials of a specific context *ex ante*. Pearl & Oliver (2013; 2015) argue that the pre-design phase is critical in creating neighbourhoods that integrate with the local urban fabric and that have positive effects for surrounding communities. Often, design tools are introduced after the budget and program have already been established and when it is too late to incorporate critical input from local community actors (ibid). The under-emphasis of the pre-design phase and lack of a holistic diagnosis in existing neighbourhood-scale sustainability design tools represent major barriers for achieving the aims of sustainability and resilience.

Focusing only on urban sustainability and resilience as outcomes to be achieved does not help the professionals, students, and professors around the world who are trying to have tangible impacts. At the end of the day, it is a team of professionals (architects, urban planners, civil engineers, landscape architects, etc) – sometimes involving local communities and other indirect stakeholders – who are responsible for developing solutions and tangible outcomes, and usually within a highly political context, yet current academic discourse does little to help these stakeholders understand how to change their ways of thinking, their day-to day-practices, or their design and planning processes. In fact, practitioners and how they practice is relatively scarce in the literature on sustainable and resilient neighbourhoods. Wilkinson in (Davoudi et al., 2012), for instance, remark that there are surprisingly few publications that address how a resilience approach to planning and design might be pursued in practice, and very few are based on empirical research *with* practitioners (Wilkinson et al., 2010).

Process-based tools are not perfect, either, however. Nor is their usefulness in practice well understood. Some examples of process-based tools include the Perkins & Will framework, the LENSES framework, the REGEN tool (funded and created by the US Green Building Council), and the EcoDistricts framework (although EcoDistricts also contains an assessment component). It is also unclear from the literature how process-based tools relate to an Integrated Design Process (IDP). Moreover, in IDP, design teams often mix both performance and process by setting

targets and using indicators on the one hand, and hosting charrettes on workshops to support the design process, on the other. Frameworks such as LENSES (Plaut et al., 2012), REGEN (Hoxie et al., 2012), and the Perkins & Will framework (Raymond J Cole et al., 2012), were developed largely by researchers in academic institutions and have not yet been tested (or at least reported and published) in the field, and so it remains unclear in what types of process settings they could be used, and if they are compatible with performance-based tools. Several design-support tools like the LENSES framework thus seem to occupy an uncomfortable grey zone between theory and practice, wherein they are both conceptually vague and impractical.

2.6 Conclusion conceptual approaches, processes, and tools for sustainable neighbourhoods

In the previous sections, several conceptual approaches and frameworks that attempt to confront environmental change and degradation were explained. Many of these conceptual approaches are based on an ecological worldview and highlight whole systems thinking. Several inadequacies with such conceptual approaches and barriers to their implementation were highlighted, however. How (if at all) are they conceptually linked to one another? What process and product elements of each can best be used in eco-districts? And better yet, how can they be synergized? At a conceptual level, these concepts are all multi-dimensional and multi-scalar. Some of them (regenerative design and industrial ecology) deal not only with static realities, but with flows. At a more practical and tangible level, recent projects such as blue-green corridors and large-scale green infrastructure show us how the resilience, regenerative sustainability, and urban ecology agendas can work together. Industrial ecology then seems to work on a different (but complementary) level by dealing with waste flows and closing loops. Finally, at a process level, the concepts studied in this literature review all require transdisciplinary collaboration. However, the regenerative design process sets itself apart from other processes by demanding broader and deeper understandings of a local site/context, and broader and deeper stakeholder engagement. These conceptual approaches together provide a strong palette from which eco-district projects can draw from.

While the concepts above show promise for advancing the sustainability and resilience agendas, this literature review showed that there exists a significant instrumental knowledge gap when it comes to operationalizing conceptual approaches. The regenerative design frameworks discussed in this chapter seem to be floating in a peculiar grey zone, somewhere between theory and practice, where the frameworks do not respond to all the theoretical underpinnings in the literature and seem too abstract to have a meaningful impact in practice. The flip side of this argument, however, is that mapping-based tools and flows-based tools often create a separation of the researcher from the subject. Critics express concern that these approaches are too positivist and may have negative social repercussions (Schuurman & Pratt, 2002). Striking a balance between effective communication tools on the one hand, and inclusive processes, on the other, indeed is a challenge that needs to be resolved.

Many frameworks are incapable (or at least it has not been proven!) of surfacing synergies and symbioses between different system elements – an aim mentioned frequently in the regenerative design, net positive development, and industrial ecology literature. The very nature of performance-based frameworks makes this difficult since each indicator is calculated discretely and only composite indicators (or aggregate indexes) may capture the relationship between different indicators. For example, a senior researcher from the University of British Columbia's 'Regenerative Neighbourhoods Project' explains when experimenting with the Urban Ecology Agency of Barcelona's Ecological Urbanism indicators, "We spent quite a bit of time mapping Rueda's indicators, but then we didn't know what to do with them." (Researcher from UBC, 2014) Salvador Rueda, the director of the Urban Ecology Agency of Barcelona, describes that it takes someone with a unique capacity for synthetic and systemic thinking to surface the synergies after the indicators are mapped.

Although current neighbourhood-scale sustainability tools are in their infancy and can be criticized on several grounds, they are, and are likely to stay relevant for advancing the theory and practice of sustainable neighbourhoods. Tools and frameworks can be important vehicles for creating a "common language" between researchers, practitioners, and civil society. Visualization tools, such as the mapping-based tools discussed in this chapter, are especially powerful in their ability to communicate information to a broad audience. For instance, Benenson and Jiang (2012)

explain, “GIS and models provide the common platform for both the professional planners and the general public.” (p. 1) They can provide guidance and support to the design team by surfacing important sustainability and resilience issues from the get go. They can help engage a broad sphere of stakeholders and create a common vision. They can help the design team diagnose the greatest potentials, most important needs, and greatest potentials of a given context (Daniel S. Pearl & Amy Oliver, 2013). And they can help the design team, the client, or the municipality track progress and reward great sustainability achievements and in some instance, reflect on lessons learned after occupancy. In short, the potentials of such tools and how they are applied will be of utmost importance to study, both for sustainability researchers and practitioners.

In reviewing definitions of dominant conceptual approaches to sustainable neighbourhood design, the design and planning process, and a new wave of sustainability tools, it becomes clear how disparate these elements are in the literature. Literature on IDP rarely mentions the tools and frameworks that can help enable a successful process. Similarly, literature on neighbourhood sustainability frameworks rarely discusses how the frameworks are used within a larger design process. Even the literature on *process-based tools* fails to fully connect the dots between these tools and how they are used, how decisions are made, and if and how they contribute to practical knowledge and synergistic solutions. This points to an important knowledge gap. What can be concluded from this is that the literature on neighbourhood-scale sustainability tools remains stuck in a “product-based” approach to studying such tools (Raymond J Cole, 2005), where only the content, weighting, and cross-cultural compatibility elements are highlighted. A “process-based” approach to studying such tools, which Cole describes as including deployment of the tool, how and when it used, and who is at the table, remains very much underdeveloped. This distinction between these two theoretical approaches will be further discussed in **Chapter 3: Theoretical Framework**.

CHAPTER 3

Theoretical Framework: A Process-based Approach

This chapter explains the research project's theoretical framework. It begins by explaining the old and dominant technical-rational paradigm based on an anthropocentric worldview. Within this paradigm, scholars tend to view neighbourhood sustainability frameworks through the lens of a "product-based approach." As this worldview is outdated and not able to solve complex urban problems, this chapter turns to an emerging, regenerative paradigm for the built environment, which is based on an ecological worldview. From within this paradigm, neighbourhood sustainability frameworks can be understood from within a "process-based approach." This chapter develops a conceptual framework for the process-based approach, based on four dimensions that were uncovered during the research project's semi-structured interviews.

Chapter 3: Theoretical Framework: A Process-based Approach

3.0 Overview of this chapter

This chapter is presented as an evolution of the literature review, as it picks apart some of the literature review's concepts into different elements and explores these elements' definitions and relationships. While the literature review focused on sustainability (approaches, processes and frameworks), this chapter focuses more generally on process in the regenerative paradigm (collaboration, participation, stakeholder engagement and relations). In order to arm the reader with the concepts that are analyzed in the case studies, this chapter presents them here in this chapter, rather than at the end of the dissertation. The conclusion chapter then builds on these concepts and lessons learned in the case studies and presents a framework for stakeholder support. This chapter therefore serves to guide the reader and facilitate the reading of the following chapters. It also explains to the reader how this framing evolved over time as new concepts were introduced during the case study field visits.

The chapter is divided three main sections. First, it explains the role of the theoretical framework in the research. Next, it briefly explains the technical-rational paradigm and the product-based approach to understanding sustainability frameworks. It argues that the product-based approach – the dominant approach to understanding sustainability frameworks and tools from within this antiquated paradigm – is inadequate for answering the research questions. In the third section, the main section of this chapter, it therefore describes the regenerative paradigm and presents the conceptual framework.

In order to help build this process-based approach for analyzing the case studies, this chapter discusses several important concepts that were brought up with a high frequency in the case study interviews when interviewees were asked about the process of using the neighbourhood sustainability tools. It is important to note that some of these concepts were not important concepts that surfaced in the literature review; however, they were incorporated in

this chapter to help set the stage for the case studies. These new concepts therefore represent important contributions to the literature on eco-districts and eco-district tools and frameworks.

This chapter draws on the works of authors from several different disciplines. It is mainly influenced by the key authors from regenerative design and regenerative sustainability, such as John Tillman-Lyle, Ray Cole, John Robinson, Bill Reed, Pamela Mang, etc. who are proponents of process-based tools, process outcomes, and stakeholder engagement. However, it is also very influenced by the work of Innes & Booher (2010) and their book *Planning with Complexity: An Introduction to Collaborative Rationality for Public Policy,* from the domain of urban planning and public policy, and other authors who are experts in collaborative planning, including, for example, Arnstein's work on different forms of public participation (1969); and Habermas' work on communicative action (1984). The last section of this chapter will help develop the key concepts for the dissertation, which will serve to help create the process-based framework in the conclusion chapter.

3.1 The role of the theoretical framework in my research

There are varying opinions on the use and placement the theoretical framework in qualitative research. As Creswell (2013) explains, "[I]n a qualitative study, the inquirer may generate a theory during a study and place it at the end of a project, such as in grounded theory. In other qualitative studies, it comes in the beginning and provides a lens that shapes what is looked at and the questions asked." (p. 119) And in mixed methods research, "researchers may both test theories and generate them." (ibid) The *theoretical framework* is the structure that supports the theory in a research study, introduces and describes the theory, and explains why the research problem under study exists (ibid). It is important because it connects the reader to existing knowledge and key authors.

The choice of where to place the theoretical framework depends in part whether the research is using deductive or inductive reasoning (coming at the beginning in a deductive study and at the end in an inductive study). This research project begins with an inductive step in the research design by identifying four process-related themes from interviews in the case studies. The researcher chose to present the conceptual framework in this chapter in order to arm the

reader with the four dimensions of a process-based approach, which are necessary for understanding the three case studies. While this decision does create a level of redundancy between this chapter and the conclusion chapter, it was deemed as the clearest structuring for the reader.[6] This methodological and structural challenge is likely common in many research projects that do not follow the common deductive, linear approach.

In traditional scientific research, a theory is often defined as "a set of interrelated constructs (variables), definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining natural phenomena" (Kerlinger, 1979). Similarly, Strauss and Corbin (1998) describe *theory* as the integration of different concepts through statements of relationships. Theory is used in qualitative research to explain a particular phenomenon and may include constructs, variables, and hypotheses (Creswell, 2013). Theories are often used "to challenge and extend existing knowledge within the limits of critical bounding assumptions." (Abend, 2008) Moreover, in qualitative research, "most researchers use theory to guide their work, to locate their studies in larger theoretical traditions, or map the topography of the specific concepts they will explore in detail." (C. Marshall & Rossman, 2014, p. 36). This is not to be confused with a *theoretical lens* or *theoretical perspective*, such as a feminist perspective, from which to view the research.

3.2 The old, dominant paradigm and the product-based approach to understanding neighbourhood sustainability frameworks

Arguably the instrumental knowledge gap identified in the introductory chapter exists largely in part because of the dominant technical-rational paradigm that influences society and the ways that cities operate administratively and legally, and the way that professions operate in

[6] Three alternative structures were considered for the dissertation: 1) presenting the theoretical framework entirely at the end of the dissertation, 2) presenting it in pieces as the four dimensions surface in the case studies, 3) presenting the four dimensions in the literature review. Option 1 would have been problematic in bringing in new literature at the end of the thesis. Besides, the reader would not have the background on the four dimensions to adequately understand the case studies. Option 2 would have been the most sequentially accurate structuring of the thesis, but the author decided that this option would have added an additional layer of complexity in the already very dense case studies. In a similar manner, the literature review was already so long and dense that it would have been unmanageable to add four additional concepts and present the conceptual framework in the same chapter.

siloes. A paradigm can be defined as the shared values, concepts and practices of a community as shaped by the particular view of the world held by that community (Capra, 1997; Kuhn, 1962; Wilber, 2001). Although originally used to describe the practices of a scientific community (a scientific paradigm), the term is also used to refer to the practices of society (a social paradigm). The technical-rational paradigm is a paradigm that straddles science *and* society.

The technical-rational paradigm has its roots in the Enlightenment and is centred on reason, logic and scientific facts, with little emphasis on values, emotions and creativity. This paradigm is also based on the positivist epistemology. Positivism rests on the premise that the world is predetermined, where the scientific method is the best approach to explain human and natural phenomena (Guba & Lincoln, 1989). Behind this is the belief that there is an objective world out there with rational solutions, a world as made up of atoms, consisting in discrete bits of information, operating according to laws and rules, and defined to give humans maximum control and manipulation over nature (Merchant, 2005). Building on this last point, Capra (1997) describes the current dysfunctional relationship between humans and the biosphere as indicative of an anthropocentric worldview that sees humans as above or outside of nature, as the source of all value, and ascribing only instrumental or use value to nature. Thus, the technical-mechanistic paradigm is associated with an anthropocentric worldview.

In the field of Architecture, the technical-rational paradigm has manifested in a number of ways, particularly with respect to how professionals are expected to frame and solve problems. Within this paradigm, the "problem" is given to the designer, and the designer is expected to use a variety of rigorous (and not creative or contextual) problem-solving approaches (Jones, 1970; Archer, 1965; Alexander, 1964). According to Schön (1984), from the technical-rational perspective, "professional practice is a process of problem-solving. Problems of choice or decision are solved through the selection, from available means of the one best suited to established ends." (p.40-41) This process is often perceived as the most reliable approach to performance optimization, since the solutions are universal (Cucuzzella, 2012).

Similarly, in Urban Planning, the period post World War II has been mainly dominated by the rational planning model (RPM), both in planning theory and practice. "The idea was that public decisions should be based on objective data, logical deductive analysis and systemic

comparison of alternatives," explain Innes & Booher. The RPM implied that neutral experts should gather, compile and analyze measurable data using known tools. Decision-makers could then in turn use this to make decisions. Most analytical methods that were developed during this period were therefore linear and assumed causal relations. However, the Technical Rationality model led to a crisis in urban planning. In response, in the 1970s, Rittel and Webber (1973) argued that scientific standards from the natural sciences and engineering were inappropriately applied to social policy and planning; instead, social scientists should question the nature of the challenges they face.

For French sociologist Alain Bourdin (2009), the arenas of Architecture and Urban Planning still remain stuck within this technical-rational paradigm. He argues that we continue to think in terms of technical and prescriptive solutions to the sustainability problem, but by neglecting the "complexity of urban life," new problems tend to be tackled using outdated but familiar concepts, which are not always best adapted to current situations (Després et al., 2011). Within the technical-rational paradigm, disciplines are separated in knowledge silos, and academia and practice are treated as two very distinct realms. To illustrate, Schon (1984) explains that in the Technical Rationality model, "professional activity consists in instrumental problem solving made rigorous by the application of scientific theory and technique." (p. 21)

Finally, the technical-rational paradigm also manifests itself in the operationalization of sustainable development and green design. The green building industry (and the field of sustainable design, as described in the literature review) in fact developed out of this technical-rational paradigm. This paradigm defines a project's success in terms of human benefit (in the form of financial benefits and occupancy health) (Mang & Reed, 2015). From this anthropocentric perspective, ecosystem services exist for human purposes, and they are attributed economic value. Green buildings, eco-efficiency, the ecological footprint, Green Building Evaluation (GBE) programs and now Neighbourhood Sustainability Assessment (NSA) frameworks, are thus based on the foundational logic of an anthropocentric and mechanistic worldview, where a system of checks and balances makes sure it works.

The Technical Rationality model has faced a number of criticisms over the past few decades. The analytical models developed from the Technical Rationality model do not account

for non-linear relations, feedback loops or complexity (Innes & Booher, 2010; Du Plessis, 2009). The way in which green building and neighbourhood sustainability assessment tools identify discrete performance requirements often results into design as a series of isolated gestures (Cole, 2012). This model also does not take into account the messy reality where politics and its many interests can block things from getting done. It underestimates the potency of "tacit" professional knowledge, and instead envisions only one knowledge vector: from theory to practice (Schön, 1984). It leads to "the sectoral division of professional responsibilities in architecture and urban planning, and […] the rigidity of established disciplinary academic traditions" (Després et al, 2011 p. 34) that results from this model. Even the long-established design studio setting in architecture faculties makes transdisciplinary collaboration with urban planning faculties with the more recent "rational scientist" model of urban planning difficult (ibid).

3.2.1 The "product-based approach" to understanding sustainability frameworks

It therefore comes as no surprise that the dominant approach to understanding sustainability frameworks and tools in scholarly research – whether at the building or neighbourhood scale – remains very focused on sustainability outcomes and prescriptive performance criteria. Studies that review the sustainability metrics used in different neighbourhood sustainability assessment tools (NSA tools) compare different NSA tools, or question the cultural appropriateness of such tools in different contexts, the appropriateness of emphasis on certain themes (for instance, the lack of emphasis on certain economic criteria), the weighting of indicators, and so forth (Alberti, 1996; Berardi, 2013; Bird, 2015; Haapio, 2012; Joss & Tomozeiu, 2013; Luederitz et al., 2013; Maclaren, 1996; Mori & Christodoulou, 2012; Munier, 2011; Sharifi & Murayama, 2013; Hamedani & Huber, 2012). Of course, the choice of sustainability indicators *does* matter (and when the wrong indicators are chosen or prioritized, we can end up with early versions of French *écoquartiers* built in totally disconnected or flood-prone areas, or LEED-certified suburban neighbourhoods where residents may still have three cars and substantial ecological footprints). Nonetheless, these studies are limited in their utility

because they at best represent an incomplete picture. Solely focusing on sustainability metrics and outcomes is pursuing what Robinson (2004) calls "the wrong agenda."

The mostly quantitative and outcome-focused approach described above is what Cole (2005) refers to as a product-based approach (refer to **Table 3.1.**). When referring to sustainability assessment tools, Cole (2005) distinguishes between 'product' and 'process.' A "product-based" approach is an approach that remains very focused on what was described above: the technical characteristics of the tools, for instance the performance criteria selected, the appropriateness of how they are weighted, the cultural compatibility of the performance criteria, and so forth. The product-based approach is limiting for several reasons. First, it is an oversimplification of quite a complex reality, meaning that it fails to address the interactions, overlaps and/or tensions between performance and process and to take into account qualitative aspects of sustainable and resilient neighbourhoods. Second, it does not adequately take into account the social dimensions of sustainability and resilience, as only a small handful of performance-based systems recognize the importance of a just and inclusive design *process* in developing sustainable communities. And third, a product-based approach to understanding sustainability tools and frameworks gives little insight for professionals who need to use these tools. It is completely divorced from the everyday practice of professionals and provides no insight for when, how, with whom, and in what design and planning process context tools should be used. It does not provide the full picture for *how* to best create sustainable, regenerative or resilient neighbourhoods and for *how* practice is shifting or needs to shift. A more holistic approach that understands how tools should be used within a larger design a planning process might offer much more insight.

Table 3.1.: The product-based approach to understanding sustainability frameworks and tools. Source: author. Based on Cole, 2005.

1. "Product-based" approach (Cole, 2005)	"The notion of product covers all those aspects of assessment methods related to scope of performance issues, including the way they are structured, scored and communicated. These technical characteristics are largely dictated by the authors of the assessment scheme and currently represent the major focus of discussion." (p. 1934)

3.3 The new paradigm and the process-based approach to understanding neighbourhood sustainability frameworks

Over the past fifteen years or so, a select stream of scholars in sustainability-related fields have begun to criticize the sustainable development paradigm for not responding adequately to urban environmental problems, such as climate change, environmental degradation, biodiversity loss, and peak natural resources. As Capra states, "We operate within an outdated worldview, which is inadequate for dealing with the problems of our overpopulated, globally interconnected world." (Sessions & Devall, 1985) As such, these scholars argue for the need for a change in paradigm towards a more regenerative and resilient one that is based on an ecological worldview. The emerging ecological worldview is holistic, "deep" and "geocentric" rather than "shallow" and "anthropocentric." (Sessions & Devall, 1985) It is based on 'complexity theory,' where here, a complex system "is composed of multiple, often heterogeneous parts that selectively interact with each other, giving rise to a coherent organization with its own attributes, behaviours and trajectory." (Zellner & Campbell, 2015, p. 459)

From an ecological worldview, the relationships of ecological systems are defined by the ways in which humans and all other organisms relate to or are dependent on one another. From this *biocentric perspective*, the success of the built environment depends on its ability to generate value in the sense of contributing to all life, and not just human life, on earth. Regenerative design and regenerative development, with the help of an integrated design process (IDP) use ecological systems to drive a "collective discovery process." (Mang & Reed, 2015)

One can trace the philosophical roots of the regenerative paradigm to virtue ethics and environmental ethics. Figures such as Aldo Leopold, Arne Naess, Joseph Rawls, and Hans Jonas have no doubt influenced the moral and ethical dimensions of regenerative design. Arguably, the ethical dimension of sustainability or of regenerative design is often neglected (Becker, 2011). Some ethical dimensions of sustainability have been dealt with by authors in the past – such as notions of inter and intra-generational justice and environmental justice; however, many other fundamental issues are not adequately acknowledged as fundamental philosophical underpinnings. Consider for instance this quote by McDonough & Braungart (McDonough &

Braungart): “Good design, with intention, with the goal of upcycling in mind, makes things better over time: just, fair, healthy, safe, quality for all – at all economic levels, even in distant places.” (McDonough & Braungart, 2013) In this one sentence, it is possible to identify principles of egalitarianism, inter and intra-generational equity, social justice, and moral virtue.

Proponents of the new, regenerative design paradigm also argue that it is important to question the language from the old paradigm and come up with new terms that are more suitable for the new paradigm (McDonough & Braungart, 2013). Words are imbued with meaning and this meaning changes depending on worldview, discipline, context, etc. For instance, Mang and Reed (2015) question what ‘value’ and ‘value-adding’ mean within the regenerative paradigm. Whereas from a technical-rational paradigm and mechanistic worldview, adding value generally connotes creating human benefits, and would most likely mean enhancing monetary worth or enhancing occupancy health (ibid). From a regenerative perspective, however, value may mean something entirely different. In a similar way, McDonough & Braungart propose changing the old adage “reduce, reuse, recycle” to “redesign, renew, regenerate.” Reed (2007) proposes using the word ‘partners’ with nature, rather than doers to nature (Mang & Reed, 2015). There is thus a great schism between the language of ‘minimums’ that guides technical-rational sustainable design on the one hand and the language of ‘maximum potentials’ that guides the regenerative paradigm, on the other. Some of the common terms inherited from sustainable design (and the mechanistic worldview) include: assessment methods, environmental performance, building occupants, certification, evaluation, metrics, assessment tools, green building criteria, and so on. Instead of assessment methods*,* in the regenerative paradigm, we could suggest *regenerative frameworks.* Instead of performance, *longevity* and *adaptability.* And instead of tools and metrics, we could refer to *regenerative processes and methodologies.*

This last sentence is very important for discussing the regenerative paradigm, as it places more emphasis on the design process than the old paradigm. Mang and Haggard (2016), two key authors in the field of regenerative design, for instance, explain: “Building a world that is different from the one we’ve built so far calls for a different approach. This is why designing the design process is as important a responsibility as designing the project itself.” (p. 110) Similarly, the

International Living Futures Institute describes that their most recent framework for developing "living communities" is about fostering relationships and other more intangible qualities:

> Indeed, "Living Community Challenge" is not merely a noun that defines the character of a particular solution for development and planning, but is more relevant if classified as a series of verbs—calls for action that describe not only the "building" of all of humanity's longest-lasting artifacts, but also the relationships and broader sense of community and connectivity they engender. It is a challenge to immerse ourselves in such a pursuit—and many refer to the ability to do so as a paradigm shift. (International Living Future Institute, 2016)

While there if a growing literature on regenerative sustainability and justification for a new paradigm, what does this new paradigm actually mean for practice? What does it mean concretely for the design process?

3.3.1 The regenerative paradigm's emphasis on *process*

Within this regenerative paradigm based on an ecological worldview sits the process-based approach (Cole, 2005) to understanding neighbourhood sustainability frameworks, which diverges from the product-based approach born out of the technical-rational paradigm. The stream of literature that favours process over performance is quite recent and largely stems from the growing field of regenerative design. Sterner (2010) emphasizes that from a complex systems perspective, "a detailed understanding of a site and interdisciplinary collaboration… rather than the specific ingredients of the design, are the critical factors." (p. 161) This approach, however, remains in its infancy and needs further development. Rather than narrowly focusing on a tool's content, the process-based approach zooms out and looks at tools and their application more holistically. The process-based approach therefore covers *how the tools are deployed,* or in other words, who is involved, how decisions are made, and how professionals and stakeholders collaborate. It is about the process that envelops the tool.

This dissertation expands on Cole's 'process-based approach' by discussing how tools can be contextualized within a larger design and planning process, including the project development model employed, the different stakeholder perspectives, the nature of partnerships involved, the timing – the *framing*. Framing can be passive (see definition above) or active. For instance, a

design support tool may be framed in the following way: used by hired consultants on behalf of a municipality to discover the priorities and vision of the local community in the very early phases of an eco-district pilot project. In a more active sense, adjustments may be made to the tool/framework to fit the context. Following the same example, the hired consultants may customize the design support tool to cater to the local context and use it to create a project charter that the community and municipality use continuously throughout the project phases.

Table 3.2.: The process-based approach to understanding sustainability frameworks and tools. Source: author.

2. "Process-based" approach (Cole, 2005)	"Process, by contrast [to product], covers a host of issues related to their use including the maintenance and development of the assessment system and, in particular, to its deployment by the design team and the engagement of other stakeholders as the basis for making informed decisions..." (p. 1934-5) A process-based approach emphasizes contextual issues, how tools are applied, and their potency to respond to new agendas. (ibid)
+ Framing (Oliver & Pearl, 2018a)	A framing approach expands on Cole's process-based approach to include the development context and nature of partnerships (developer-led, city-led and third party-led models), the range of stakeholder perspectives and interests, the levels of inclusion of different stakeholders, the timing, and any adjustments made to the tool/framework.

Here, framing is used as an expansion or extension of Cole's 'process-based' approach and thus may be considered as *part of* the process-based approach. Framing and process are used as lenses throughout the dissertation through which to understand the three case studies.

Besides Cole's paper from 2005 mentioning the distinction between the product-based and process-based approaches, the process-based approach is very underdeveloped in the literature. This research project attempts to bridge this gap. The next few sections will therefore help build a conceptual framework for the process-based approach. First, several process-based concepts from the literature will be explained before introducing the four concepts / dimensions that were uncovered in semi-structured interviews.

'Procedural Sustainability'

In a paper by Robinson & Cole (2015), the authors develop the notion of 'procedural sustainability'. Arguing that social sustainability has received inadequate attention both in the

policy debate and in building practice, they argue that process outcomes (capacity invested) should be as important, and receive as much attention, as performance outcomes. According to these authors, sustainability is a conversation or dialogue with different stakeholders that integrates different perspectives. It is a process and not an end-state (Robinson, 2004; Robinson & Cole, 2015). With respect to conventional sustainable buildings, they explain that the process aspects relate primarily to supporting the evolving design of the building – life cycle analysis, energy and thermal comfort modelling, commissioning, etc. – which are largely internal to the design team. An Integrated Design Process (IDP) may also be used for conventional sustainable building design, but again, this *collaboration* is usually limited exclusively to members of the design team. By contrast, they explain, regenerative design or regenerative sustainability places much more emphasis on the early-design stage and the engagement of a larger sphere of stakeholders. In regenerative projects, process is given much more of an importance than in conventional architectural projects (or even conventional 'green' buildings).

'Procedural sustainability' is therefore defined by Robinson & Cole as rooted in collaborative planning for sustainable community development and as being part of social constructivist theory. From within a regenerative approach to building design or neighbourhood planning, collaborative planning is used to help develop the "stories of a place" (Robinson & Cole, 2015). The authors explain:

- Community members may participate in the long-term duration of a project, from conceptualization to ongoing realization;
- A diverse range of voices may be included, and the aim is to connect individuals with each other, as well as establish a sense of connection to surrounding community systems;
- The connections that are made during this collaborative process enhance the capacity of a community to sustain them after the practitioner is gone;
- Regenerative practices are interdisciplinary in that they rely on data from different disciplines.

At the heart of 'procedural sustainability' is the belief that sustainability cannot be purely top-down; "It must be constructed through an essentially social process whereby scientific and other "expert" information is combined with the values, preferences and beliefs of affected

communities, to give rise to an emergent, "co-produced" understanding of possibilities and preferred outcomes." (Robinson, 2004) 'Procedural sustainability' is therefore about a *conversation* or a *dialogue* between relevant stakeholders and requires the integration of different perspectives "and the recognition that sustainability is a process, not an end-state." (ibid)

Overarching principles for the regenerative paradigm

An extensive literature review was undertaken for this dissertation and summarized in **Chapter 2: Literature Review**, which resulted in uncovering seven different process characteristics for a change in paradigm:

1. Strong engagement and participation of diverse stakeholders in planning and decision-making processes, with a more even distribution of power between public decision-makers, the private sector, non-profit organizations, the academic world, and citizens
2. Tight interdisciplinary collaboration between internal and sometimes external stakeholders, with integration of stakeholders across scales and systems
3. Conscious collective and adaptive learning, meaning that stakeholders learn together and from one another, experiment, and apply lessons learned (double-loop learning)
4. Designing from place, where members of the design team spend time understanding a site across multiple, holistic dimensions
5. Integrated, synergistic, systemic thinking, where design team members seek to understand the synergies between different interventions and different scales
6. Building individual, collective and institutional capacities in order to enhance resilience; fostering self-organization and resistance to shocks
7. Blurring spatial boundaries and benefiting surrounding systems, meaning that the planning team seeks to understand how the eco-district project can have net positive impacts for neighbouring communities and will strive to involve stakeholders from surrounding communities in the design process

As emphasized in Chapter 2, this last principle above all sets the regenerative approach apart from other sustainability approaches.

3.3.2 The concept of "transitioning"

Scholars like A. Smith et al. (2005), Cash et al. (2006), Hodson and Marvin (2010), and others, have developed an entire research field on *transition management theory.* The Oxford Dictionary defines transition as "[t]he process or a period of changing from one state or condition to another." ("transition," 2018) The transition management approach aims to translate principles of sustainable urban development into the active management of a widescale social and cultural shift toward sustainability (Holden et al., 2016). The term 'transition' is also one that is fairly commonly used with respect to climate change and sustainable development; for instance, "transitioning to a carbon neutral economy." The concept of transitioning to a new paradigm obviously stands in contrast to more radical, transformational change or "quantum leaps." It also stands in contrast to other well-known models such as Holling & Gunderson's panarchy model, where the collapse of a system is necessary in order for the system to reorganize perhaps in a new, better way.

Smith et al., for example, argue that market conditions, consumer demand, and lack of adequate infrastructure to handle change are all factors that inhibit rapid change. From within the technical-rational paradigm, "there is a tendency to treat regime transformation as a monolithic process dominated by rational action and neglecting important differences in context," (A. Smith et al., 2005) and for this reason, focus on the necessary preconditions for transition or transformation is often skewed. They argue that that societal pressure for change and adaptive capacity are necessary preconditions for transition (ibid). Moreover, they say, contextual factors and an understanding of pressures exerted on a regime are necessary for effectively transitioning. From here, the authors set out to describe the role of *agency* in socio-technical transitions. In other words, transitions depend on good governance, which in turn depends on regime 'membership', resource interdependencies, and stakeholder expectations (ibid). For them, it is these last two elements that identify the *adaptive capacity* of a regime.

Arguably, the presence or absence of these elements will impact a regime's ability to transition, leap forward, or stay stagnant.

Who is likely to best facilitate a transition towards a regenerative paradigm for the built environment? Transitions can be generated within or from external structures and resources and can happen at different speeds. However, as Holden et al. argue, "traditional practices of top-down, regulate-and-control governance are ineffective as agents of change, effective as they may be at establishing and maintaining order." They add that because of many governments' poor track records for forming and maintaining partnerships with non-government entities, transitions are more likely to be led by horizontal partnerships intending to advance sustainability transitions consisting of non-government and private sector partners.

Some scholars believe that "intermediary organizations" are fundamental to this shift in paradigm (Cash et al., 2006; Holden et al., 2016). They are fundamental because none of the key stakeholder groups – developers, governments, non-profits, communities – are invested enough in one particular role or responsibility to "spread the practice" of eco-district building more broadly. Intermediary organizations will likely play key roles in designing, crafting, promoting and applying eco-district frameworks, and to share their role with other stakeholder interest groups. They are fundamental for gaining "acceptance" from different stakeholder groups in a project (Holden et al., 2016).

How fast a "transition" can occur may depend on a host of factors, including local political context, the diversity and transparency of a community, and whether the eco-district in question is in an existing neighbourhood or a new (brownfield or greenfield) neighbourhood. This research will also, as the case studies demonstrate in this dissertation, show how the internal attributes of the planning team and other stakeholders involved also influence the speed at which a transition can occur, since a planning team with certain capacities that will be explained in the case studies is much more able to maintain momentum and help bring the project to fruition.

3.4 Conceptual framework

Drawing on the literature concerning regenerative design, resilience, urban ecology, eco-districts, and neighbourhood sustainability tools, certain themes emerged as important and

recurring with respect to the design process. For example, the literature review revealed several process-based principles described in section 3.3.1. However, it was not until after the case study interviews were transcribed and coded according to major themes that the primary components of a process-based approach to understanding neighbourhood sustainability frameworks were identified. This process was non-linear and iterative; in this sense, the theoretical framing was cumulative and evolutionary. The researcher chose to use themes that emerged from interviews as opposed to from the literature in order to approximate, as much as possible, the reality that stakeholders experienced in the field. After these new concepts emerged from the case studies, new literature was consulted to create a more robust understanding of these concepts. For example, when interviewees spoke repeatedly about stakeholder roles and responsibilities, new literature and new theoretical models were consulted from the stakeholder management field (a research area under the umbrella of project management). Refer to section 3.0 for an explanation of why these new concepts were presented in this chapter, instead of in the results chapter.

Figure 3.1 describes the framing that resulted from just a literature review. After the EcoDistricts fieldwork visit in late 2015, the fields of collaborative planning and governance and stakeholder management needed to be consulted in order to build an in-depth understanding of 'collaboration' and 'stakeholder roles and responsibilities,' which were two dimensions of a process-based approach that surfaced repeatedly in the interviews. Next, after the fieldwork visit to Malmö in Sweden from the BREEAM-Communities pilot project, community participation and communications theory literature needed to be added in order to expand on the themes of community consultation and visual communication. Finally, in the case of the superblock pilot project in Barcelona, no additional literature was consulted in order to develop the themes of collaboration, community participation and stakeholder roles and responsibilities, as these themes were already developed in the two previous case studies. It is important to note that the fields of stakeholder management and communications theory have not yet been integrated into the literature on eco-districts and therefore represent new contributions to the field.

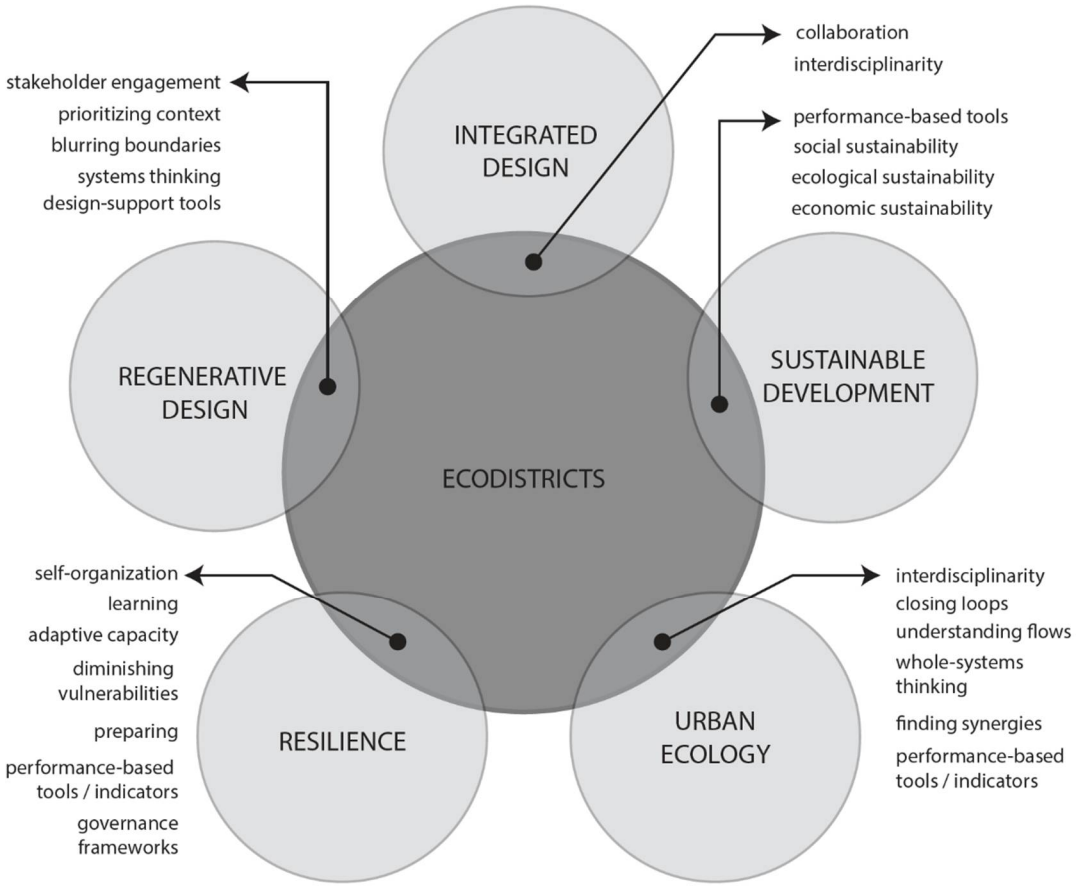


Figure 3.1: Step 1: theoretical framing for a process-based approach, based only on a literature review. Source: author.

3.4.1 Collaboration in the design process

How stakeholders work together and who is involved in the design/planning team and the larger project context are important elements that impact the planning process in terms of framing design problems and making decisions along the way. Joss (2015) argues that there seems to be a consensus growing in theory and practice that sustainable urbanism should be realized through new governance based on collaborative partnerships and integrated planning.

Collaboration, or more specifically, collaborative planning, emerged as an area of research as a backlash to the 1960s rational planning approach, which centred on planners' technical skills, and which was based on a positivist epistemology. A new wave of scholars started pushing for collaborative planning, and these planning researchers were inspired by critical theorists such as Habermas (see for instance Forester (1988); (Healey, 1992, 1997); Innes (1995);

Innes & Booher (2010)). In these collaborative planning models, the planner's role becomes more that of a facilitator (Innes, 1995; Smedby & Neij, 2013) than a rational expert. However, collaborative planning has also been criticized for naively ignoring power relations in society and for putting too much stock in dialogue.

Collaboration in the design process can be defined simply as the work between project professionals and various and divergent stakeholders or stakeholder groups. Lizarralde et al. (2011) define collaboration as higher levels of integration between "stakeholders that share similar responsibility and authority (notably among professionals or between professionals and contractors)." (Viel et al., 2012, p. 3) Collaboration is also seen as an important mechanism for innovation and is inherently linked to dialogue and negotiation and a spirit of collective knowing and deciding. Collaboration does not usually imply the involvement of local community stakeholders (although it can). Ideally, good collaboration and stakeholder participation can help in creating a shared vision, in fostering co-learning, and in leading to long-term stewardship in a project. In some instances, even collaborating to create a partnership, memorandum of understanding, or pilot project – in other words, collaborating to simply get a project to happen – is an enormous feat!

One branch of collaborative planning is negotiation theory with the works of (Fisher & Ury) and their book, *Getting to Yes.* They generated principles that have profoundly affected understandings of collaborative dialogue, including: separate people from the problem, focus on interests, instead of positions; invent options for mutual gain; use objective criteria; and develop a BATNA (Best Alternative to the Negotiated Agreement). According to Fisher & Ury, either "hard bargaining," where one person insists on having his or her way, or "soft bargaining" where one person gives in to avoid conflict, are both destructive. Rather, "the collaborative dialogue to produce durable conclusions, every party must both know his or her interests and explain and stand up for them." (Innes & Booher, 2010)

Collaborative Governance

Collaborative governance can be defined broadly as a type of governance in which governments, communities, and private sector actors communicate and work with each other in

order to achieve greater results than any one interest group could achieve on its own. The Eco2Cities Initiative defines collaborative governance as “an expanded platform for collaborative design and decision-making that accomplishes sustained synergy by coordinating and aligning the actions of key stakeholders.” (Suzuki et al., 2010)

Collaborative governance scholars make several arguments in favour of this type of collaborative effort. Joss for instance argues that there is a growing demand for collaborative, public engagement, and the expectation is that by involving residents, neighbourhood associations, civil society organizations, and so on, that the openness and accountability of planning and decision-making processes can be assured or enhanced (Joss, 2015). A second argument is that collaborative governance can help identify actions and individuals with special talents and can help joining up the interests, skills and expertise surrounding sustainability issues (Joss, 2015; Suzuki et al., 2010). And third, decision-makers and investors understand that bringing all stakeholders together “massively increases the chances of successful delivery of urban projects.” (Joss, 2015) The EcoDistricts Framework, for instance describes itself as a collaborative governance framework. However, perhaps an even more useful concept for the process-based approach is the concept of ‘collaborative rationality.’

Collaborative Rationality

Innes & Booher develop the concept of *collaborative rationality* to stress collaborative efforts between the different actors in a project and argue that collaborative projects are usually more successful than purely top-down and linear models of project delivery. Drawing from American pragmatists, their work seeks to theorize an approach to collaborative planning. Innes & Booher define collaborative rationality in the following way: “A process is collaboratively rational to the extent that the affected interests jointly engage in face to face dialogue, bring their various perspectives to the table, and deliberate on problems they face together.” (p. 6) *“*For the process to be collaboratively rational,” they continue, "all participants must also be fully informed and able to express their views and be listened to, whether they are powerful or not. Techniques must be used to mutually assure the legitimacy, comprehensibility, sincerity, and accuracy of what they say. Nothing can be off the table. They have to seek consensus.” (Innes & Booher, 2010) Collaboration can lead to many benefits; it can lead to individual and collective

learning that will help make communities more adaptive and resilient and can create social and political capital that is long-lasting (p. 9). Other possible benefits / results of collaborative rationality include: participants realize that there is interest in achieving mutually-beneficial agreements since their interests are interdependent; stakeholders develop new relationships which often survive the conclusion of the collaborative process; single and double-loop learning emerge from collaboratively rational dialogue as participants discover new things and re-examine their behaviours (Innes & Booher, 1999a); and finally, participants can start to develop shared meanings. Beyond the ethics of including all interest groups in a planning project, collaborative rationality suggests that the bringing together of different voices actually sparks more innovative solutions.

Innes & Booher suggest that rather than defending pre-existing solutions, collaborative models of practice can actually help everyone at the table see new opportunities and find new, creative solutions to complex problems. It is not about solving problems and meeting concrete goals – it is about new forms of deliberation and dialogue that deliver a better *process.*

Certain conditions must be met concerning the stakeholders brought to the table in a descriptive, normative theory the authors call the DIAD model. Here, Innes & Booher argue that for a process to be collaboratively rational, there needs to be a full diversity of interests among participants (D); Interdependence of the participants who cannot get their interests met independently (I), and authentic dialogue (AD) as defined by Habermas. Moreover, the authors suggest the following process-based components:

- that all stakeholder interests jointly engage in face-to-face dialogue;
- that all participants be fully informed;
- that all participants be fully listened to;
- that techniques be used to ensure the legitimacy, comprehensibility, sincerity and accuracy of stakeholders; and
- that stakeholders seek consensus.

Innes & Booher's work is summarized in figure 3.2 below and is subject to the author's understanding of such work. It summarizes the basic argument for collaborative rationality (left hand column), the conditions for collaborative rationality (centre column), and the anticipated

results (or benefits) (right hand column). When the basic conditions are fulfilled, the benefits of collaborative rationality can be realized. The arrow signals this cause and effect relationship.

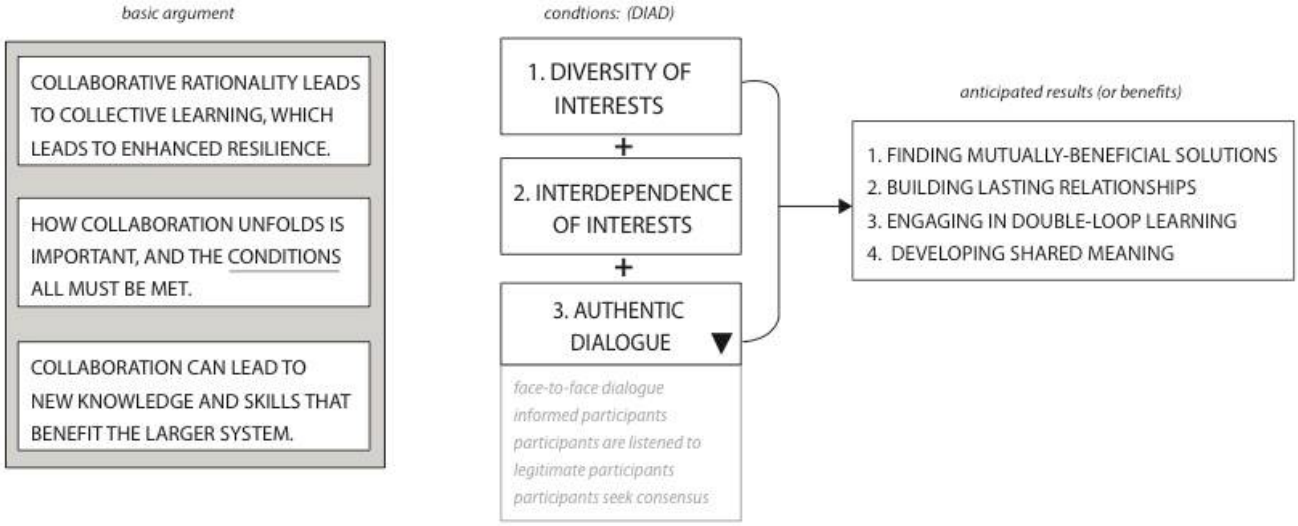


Figure 3.2: Summary of Innes & Booher's *collaborative rationality* model. Source: author.

Collaborative rationality is about seeking a balance of power between different stakeholder groups and to make sure everyone's voice is heard and integrated. In the case of a sustainable neighbourhood project, this would mean seeking a balance between the developer/client, the city (officials and politicians), and the community. In practice, however, this is very difficult.

3.4.2 Community participation in the design process

Collaborative rationality is also a concept that bridges the concepts of *collaboration* with *community participation.* As mentioned above, Innes & Booher promote the DIAD approach (Diversity, Interdependence, Authentic Dialogues), where diversity in a group of stakeholders includes all those who have material interest in the problem. These stakeholders are often excluded in a "politically expedient process" (Innes & Booher), but their full participation is needed to achieve true, authentic dialogue. This authentic dialogue is in turn necessary in order to achieve consensus and for making more ethically sound decisions, based on people coming

together. Indeed, consensus-building is one of the main benefits associated with participatory processes (Innes & Booher, 1999a).

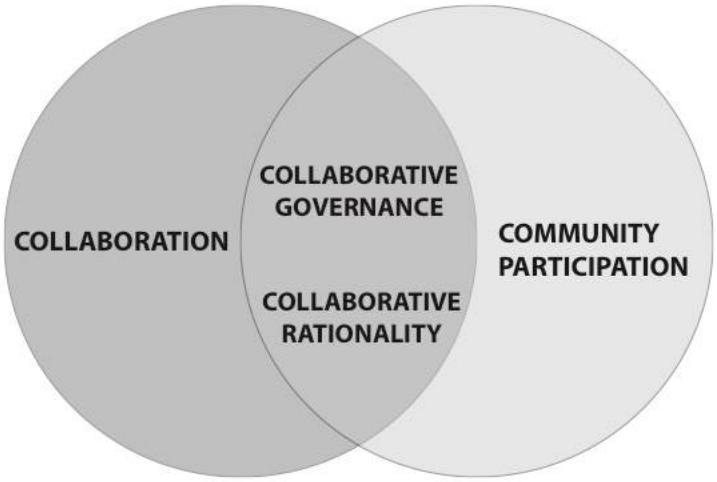


Figure 3.3: Collaborative governance and collaborative rationality as concepts that bridge collaboration and community participation. Source: author.

Definitions, advantages, and challenges of community participation

Participation can be defined very simply as the actions of stakeholders outside the project (civil society, citizens, neighbourhood associations, business associations, etc.), although like any broad concept, it has been defined many times and in many different ways. Hassenforder et al. (2015) define participation as "the practice of consulting and involving relevant stakeholders in the agenda-setting, decision-making, and policy-forming activities [or processes] of organizations or institutions responsible for policy development." (p. 84) Here, they do not go into detail on the differences between consultation and participation, which are dealt with in Arnstein's ladder of participation described below. Community participation can be complex and demanding, insofar as it represents an expectation that a community as a whole can influence decisions on behalf of collective interests. This in turn requires defining communities, identifying their interests, and elaborating ways communities can act in service of their interests. It is increasingly recognized that community participation represents an important dimension of sustainable development (Baber & Bartlett, 2005; Forester, 1993; Hawkins & Wang, 2012; Koontz, 2006; Layzer, 2002; Portney & Berry, 2010; Weber, 2003).

The field of participation emerged in the 1960s again in response to the top-down application of the rational model (Hawkins & Wang, 2012). One of the most well-known community participation theorists is Arnstein, who has framed much of the discussion on participation over the past forty years (ibid). Arnstein argues that participation does not always serve the public / collective interest; on the contrary, when the public is merely consulted on decisions that have already been taken behind closed doors, public consultation only goes to serve authorities. Arnstein's ladder of citizen participation famously distinguishes between different levels of citizen participation. It is all about who holds the power in participatory projects. Participation without redistribution of power is empty and frustrating for citizens who have no say in decision-making processes that affect them. Meaningful participation occurs only when citizens have an impact on possible outcomes. Arnstein's eight rungs are as follows, beginning with non-participation and working up to full participation: manipulation, therapy, informing, consulting, placation, partnership, delegated power, and citizen control. In the bottom rungs, authorities simply "educate" and "inform" citizens (see figure 3.4). The middle rungs represent a form of tokenism, where citizens' voices may be heard, but they have no impact on decision-making. Finally, in the top rungs, citizens are able to voice their opinions and have an impact on outcomes and decision-making. The figure below depicts Arnstein's ladder, which will be used in two of the case studies to facilitate an understanding of how community participation unfolded.

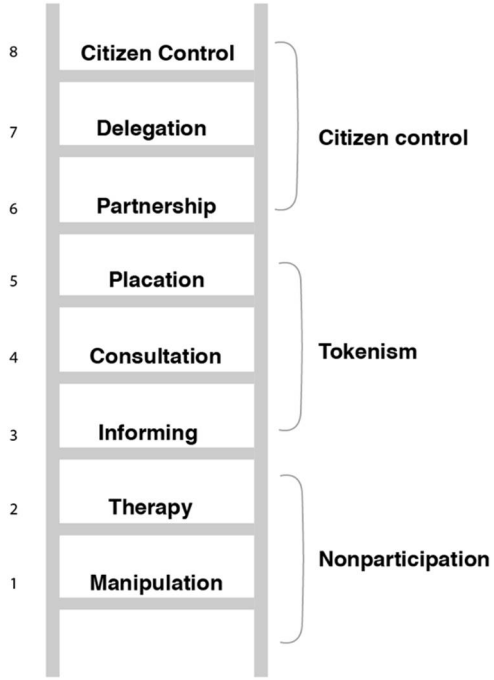


Figure 3.4: Arnstein's ladder of citizen participation. Source: author. Based on: The Citizen's Handbook.

Other models besides Arnstein's of course, exist. But in general, participation models make three main distinctions. First, there are the participatory processes where stakeholders are simply given information (one-way communication). Second, there are processes where stakeholders are asked their views, but it is not a given that these views will inform decision-making (two-way communication, but no collective learning or knowledge construction). And finally, there are participatory processes that encourage knowledge exchange between stakeholders in an effort to build shared meaning and reach a consensus on desired outcomes (two-way communication with collective learning and knowledge construction) (Parent et al., 2012). The second category is sometimes referred to as community consultation.

Authors such as Hassenforder et al. (2015) and Quick and Bryson (2016) identify some factors for community participation to be successful, including the use of expert and local knowledge in decision-making processes and design of a proper participation process. Rowe and Frewer (2000) propose different criteria for a participatory process: representativeness of the population, independence of the process (non-bias), early involvement, genuine influence, and transparency. They also identify certain "process criteria": resource accessibility to fulfill their

brief, clearly defined tasks, structured decision-making, and cost-effectiveness. Bickerstaff and Walker (2001) add that a successful outcome of participation is that it has an influence on the shape of a plan and on specific areas of a plan. Regarding the quality of participatory processes, Quick and Bryson (2016) argue that participation processes must fit the context in which they are taking place. They recognize "justice" and "rationality" as two main characteristics. Indeed participation enhances 'procedural justice' and embodies values such as "fairness, transparency, attentiveness to stakeholders' concerns, and openness to public input." (Ansell & Torfing, 2016)

Not all scholars or decision-makers are convinced about the usefulness of public participation, however. A small number of interviewees in this dissertation, especially in Malmö stated that participatory workshops were often used for citizens to vent and were ultimately completely unproductive. Some decision-makers feel that public participation results in solutions that are costly and technically infeasible (Fayazi & Lizarralde, 2013; Poteete et al., 2010). Others argue that at times, participation may undermine the pursuit of sustainability, as citizens may participate because they are angry about a sustainable proposal or plan (Portney & Berry, 2010). NIMBYISM is therefore a factor. Indeed, community participation does not always entail moving in an ethical or sustainable direction if the community in question is motivated by interests that stand in opposition to sustainability or social justice. In this sense, community participation does not *de facto* lead to a paradigm shift to a more regenerative, resilient built environment model.

Proponents of community participation, on the other hand, argue that participatory processes can foster co-learning, which helps solve important long-term issues, can also help build capacity, and can help impact decisions / outcomes (Hassenforder et al., 2015). Baum argues that community participation provides useful local information to help make sound decisions, helps citizens feel invested in results, can help resolve conflicts over problems and solutions, and can provide personal benefits for the citizens involved. Arguably the level of usefulness of public participation meetings and charrettes depends on factors such as the level of awareness and education of participants with respect to the project in question, their level of knowledge surrounding urban, social, and ecological issues, the quality of facilitation in the meetings, and the quality of interaction between technical and lay knowledge. But how much participation is desirable and workable? Who should participate, and when?

Consensus-building

With respect to this last point on consensus-building, Innes and Booher (1999a) explain, "The most important consequences may be to change the direction of a complex, uncertain, evolving situation, and to help move a community toward higher levels of social and environmental performance because its leadership has learned how to work together better and has developed viable, flexible, long-term strategies for action." (p. 413) Innes & Booher also make an interesting point about the blurring between process and outcomes, as having a good and just process *is* a positive outcome. They argue:

> Processes and outcomes cannot be neatly separated in consensus building because the process matters in and of itself, and because the process and outcome are likely to be tied together… Consensus building stands or falls instead on the acceptability of its process. It needs to produce good answers through good processes. A process which ignored a vulnerable interest, failed to take into account important facts, or did not challenge unnecessary constraints, would not only lack credibility, it would probably not produce a particularly good solution. (p. 415)

They then propose a series of process criteria and outcome criteria for evaluating a successful consensus-building activity. Process-based criteria include diversity of stakeholders, a shared purpose, self-organization, and challenging the status quo. Outcome criteria includes reaching a high-quality agreement, producing creative ideas and learning beyond the group, resulting in institutions and practices that are flexible and networked. Innes & Booher's collaborative rationality models and research on consensus-building will therefore help in analyzing the case studies, and eventually creating the process-based theoretical framework at the end of the dissertation. However, other definitions and understandings of participation also exist, which contribute to an understanding of the values, challenges, and benefits of participatory processes. Figure 3.5 below summarizes the conditions for consensus-building (the two left hand side columns) and the anticipated benefits when these conditions are fulfilled.

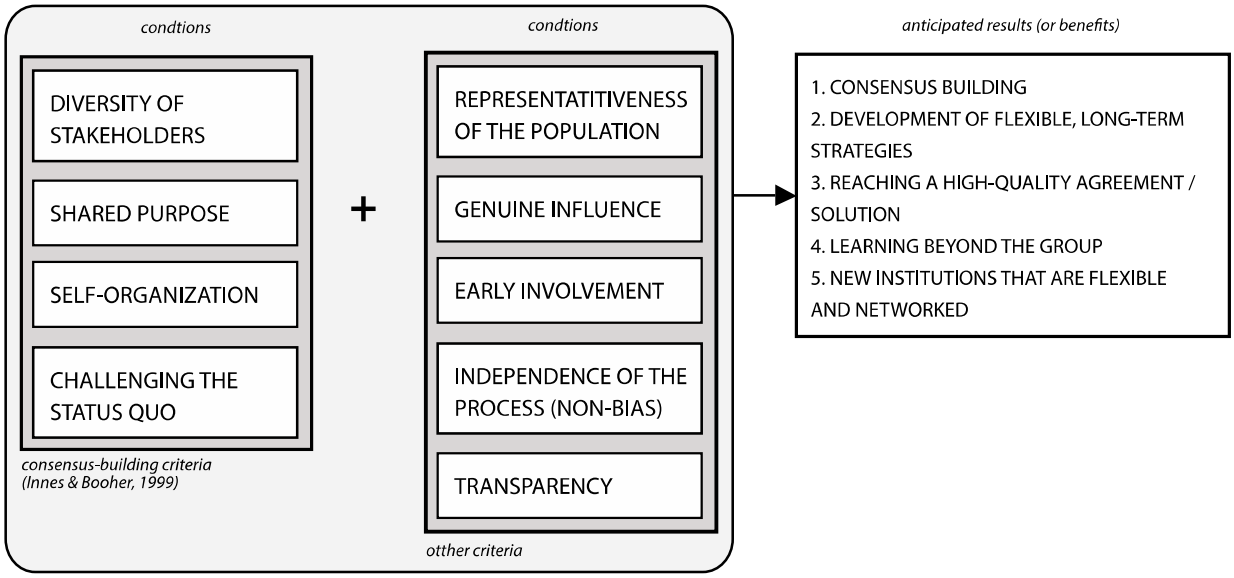


Figure 3.5: Conditions for consensus-building and participatory processes. Source: author.

3.4.3 Stakeholder roles and responsibilities in the design process

Of course, for understanding the concepts of collaboration and community participation, it is important to understand who is at the decision-making table (see figure 3.6). The concept of "stakeholder" is therefore quite important. Note that the diagram is meant to show the relationships between the different concepts, but rarely in real life are these relationships so symmetrical.

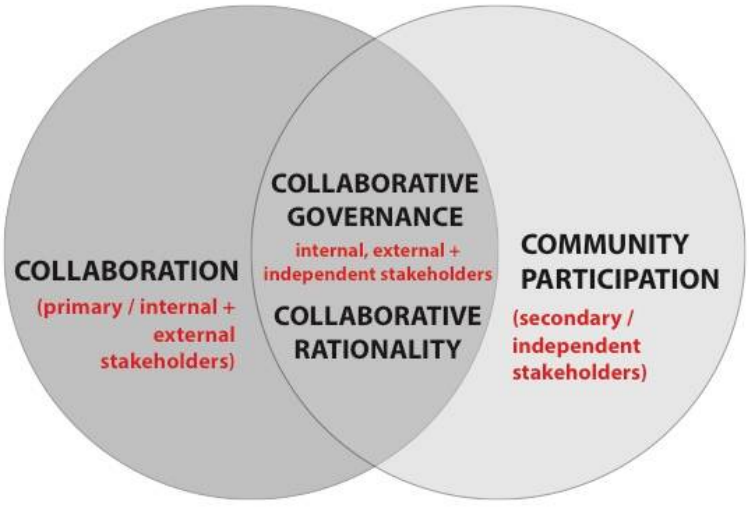


Figure 3.6: Relationship between collaboration, community participation, and stakeholders. Source: author.

The concept of stakeholder was first introduced in the 1960s but gained wide acceptance in the 1980s with the publication of Freeman's book in 1984, *Strategic Management: A Stakeholder Approach* (Preble, 2005). Here, Freeman defined a stakeholder – a play on the word *stockholder* -- quite broadly: "A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization's objectives." (p. 46) Raynaud (2015) argues that governance and interaction of stakeholders is the missing key for sustainable development.

So who is considered a stakeholder in an urban project? From the project management field, Preble makes the distinction between primary, secondary and public stakeholders. Primary stakeholders are those players who have legitimate interests in a project or activity, a direct impact or are directly impacted by a project, such as employees, clients, shareholders, and so forth. Secondary stakeholders are those who can influence or affect, or are influenced or impacted by, the project or activity, but are not engaged in direct actions, for instance lobbyists, community groups, neighbourhood associations, and so on. Their interaction can nevertheless have a strong impact on the project. According to Dubigeon (2005), secondary stakeholders more and more demand a right to knowledge and to participation. Finally, public stakeholders are those that provide infrastructure and legal frameworks under which the project or activity operates. Similarly, but adding another layer of detail, Raynaud (2015) distinguishes between internal stakeholders (the client, owner, project management team), external stakeholders (consultants, engineers, and other contractual professionals), and independent stakeholders (citizens, associations, and lobbyists, etc) and also between political stakeholders, entrepreneurial stakeholders, and "free" stakeholders. Given these different types of stakeholders and the different ways of classifying them, whose interests matter? Or do stakeholders' interests have intrinsic value in and of themselves, as argue Donaldson and Preston (1995)? And how do these different stakeholders share power in eco-district projects?

Based on Raynaud's stakeholder governance model, figure 3.7 describes the relationships between different stakeholders in a typical urban project and the type of relationships that these stakeholders have with the project in the form of a sociogram. For instance political stakeholders

(politicians, officials, City bureaus and departments, etc) have an administrative relationship with an urban project; entrepreneurial stakeholders (professionals, private developers, consultants, etc.) have contractual relationships with the project in question; and "free stakeholders" (Clarkson, 1995) (community members, neighbourhood associations, business associations, etc.) have neither an administrative nor a contractual relationship to the project. These "free stakeholders," however, exert influence over the political stakeholders, who control the entrepreneurial stakeholders. Finally, the relationship between the entrepreneurial stakeholders and the "free stakeholders" is usually one of engagement, where the entrepreneurial stakeholders may be contracted to listen to the community's needs and understand their vision. The scheme therefore illustrates the relationship of different stakeholder groups to one another and to the project.

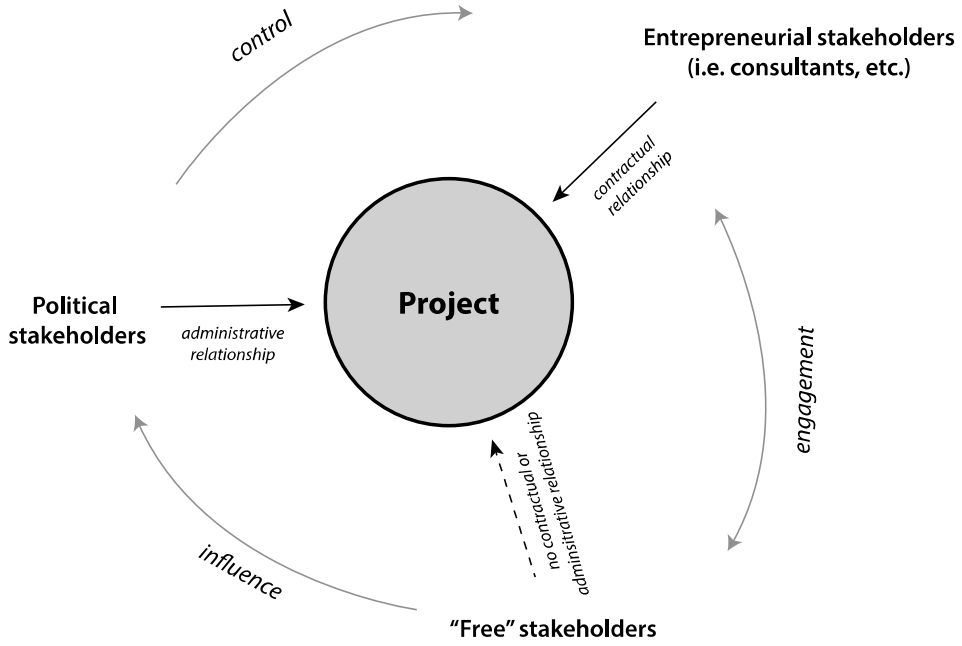


Figure 3.7: Sociogram of primary stakeholder types and their relationship to a typical project. Source: author. Inspired by M.M. Raynaud, 2015.

Besides identifying different types of stakeholders, it also important to understand their 'position' relative to a project. Are they for or against the project? Do they have financial or other stakes invested? What is their level of power, legitimacy, and urgency (Mitchell et al., 1997; Preble, 2005)? Or their level of importance and influence (Mayers, 2001)? Who has final decision-

making say? How do they, especially private sector, governments, and citizens, share power? Power relations and if and how stakeholders are willing to share power are of utmost importance; asymmetric power relations may lead to communication breakdowns, or at the least, tensions in the planning process. Frooman (1999), for instance, argues that it is important to ask three questions about stakeholders: Who are they? What do they want? And how are they going to try and get it? In the stakeholder management field, the type of stakeholder, its relative importance and influence will determine the type of strategy for involving this stakeholder, which can range from protecting against the stakeholder, listening, involving and collaborating (Savage et al., 1991). Finally, it is important to define stakeholders' roles and to ensure that they are clearly defined. A stakeholder's role can be defined as "the activity the incumbent would engage in were he to act solely in terms of normative demands upon someone in his position." (Lievrouw & Finn, 1990)

The actors who collaborate and the platform from which they collaborate can vary greatly from project to project. Typically project professionals in a sustainable neighbourhood or eco-district project include, but are not limited to: architects, urban planners, landscape architects, engineers, sustainability coordinators, external consultants, etc. Stakeholder groups might include: community / communities, neighbourhood associations, private developer(s), city officials / politicians, and non-profit organizations. Successful collaboration on a project may also require a leader or "champion" to coordinate efforts and to successfully explore innovation potentials (Nam & Tatum, 1997). Such a champion is also sometimes referred to as a facilitator and may be either internal or external and neutral to a project. The role and importance of each stakeholder group will be discussed at length in chapters 5 and 6 with respect to the case studies.

Building on this last point, how to deal with conflict becomes an important dimension of stakeholder relations. Usually, conflict occurs when there are incompatible goals, assets, actions, or expectations among individuals, resulting in opposition and disagreements. Conflicts can be exacerbated when power distribution is asymmetrical. Some important questions therefore include, how do we ensure an equitable relationship between stakeholders involved in eco-district projects? And how do we mediate/arbitrate conflicting expectations? In order to avoid conflict in the first place, it is important to spend the time necessary to align stakeholders on

their roles, vision and purpose. There are of course a number of ways of doings this. Regenerative design practitioners such as Bill Reed and Pamela Mang sometimes spend more than a month on a project ensuring that they have stakeholder alignment. Daniels and Walker (2001), for example suggest the "collaborative learning model," in which stakeholders must create a shared conceptual model of the complex system they are working on; in doing so, they become aware of their interdependence and need to work collaboratively. A process of continuous dialogue and mutual learning can also reduce the likeliness of conflict to occur (Baur et al., 2010). However, when conflicts do arise, Heifetz et al. (2009) argue that in an adaptive leadership context, it is important to let the conflict emerge and surface, rather than trying to conceal it. Rahim and Bonoma (1979) outline the five most common styles for dealing with conflict: confronting, dominating, compromising, accommodating and avoiding. Several authors suggest that the confronting style is the most efficient, as through open dialogue, it can lead to win-win scenarios for stakeholders (see also negotiation theory in section 3.3.4). Other authors suggest that conflict management is a process that requires several steps: identifying the conflict, resolution, enactment, and evaluation. However, as discussed in **Chapter 2,** section 2.4.2, if the conflict is of an 'adaptive' nature, this might require more steps and learning from the various stakeholders involved.

In figure 3.8, the zone between the stakeholder groups represents the space for collaboration, negotiation or conflict. When gaps exist between the actions, assets, or expectations of stakeholders[7], then tensions and conflict can arise. In fact, Frooman (1999) argues that stakeholder management is essentially about exactly this, understanding the gaps in expectations between different stakeholder groups in order to minimize the conflict that can arise due to these differing expectations. For example, two different stakeholder groups could have aligned expectations and assets, but conflicting ways of acting to get what they want in a project.

[7] It is interesting to note the similarities between this stakeholder relationships model and the elements for transition described by Smith et al. in section 3.3.2.

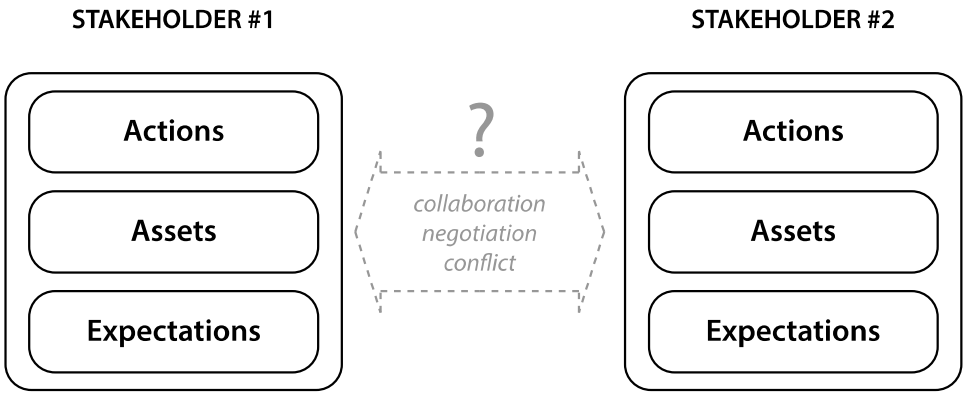


Figure 3.8: Relationships between stakeholders. Source: author, inspired by the work of M.M. Raynaud, 2016.

The models presented in figures 3.7 and 3.8 will help in the case study analyses for those case studies where interviewees underscored the importance of stakeholder roles and responsibilities, although certain other lessons are learned from the case studies, which contribute to the conceptualization of stakeholder management.

3.4.4 Visual communication in the design process

Now that we understand the concepts of collaboration, community participation, and the stakeholders who are likely to collaborate or engage in participatory processes, it is important to understand more about the ways in which these stakeholders work together: their working methods (see figure 3.10). One such factor is communication, which can be defined as "human behaviour that facilitates the sharing of meaning and which takes place in a particular social context." (Lievrouw & Finn, 1990) In the fields of architecture, engineering, urban planning, and landscape architecture, communication is often of a visual or graphic nature; however other forms of communication are also important. Because "solving a problem simply means representing it so as to make the solution transparent," as explains Simon (1996), enhancing a designer's ability to collaborate, share, and understand processes requires representing the process in ways transparent to the designer.

One of the pioneers of communications theory is Habermas, who developed the theory of communicative action in the 1980s. This represents a very important contribution to understanding the form of communication in the design process. The theory explains how,

through communication, stakeholders can come to a shared understanding of a design problem (Habermas, 1984). Habermas defines communicative action as a form of communication where "the actions of the agents involved are coordinated not through egocentric calculations of success but through acts of reaching understanding." (Habermas, 1984) From within this perspective, communicative action is a two-way communication between the different members of the design team, rather than a one-way top-down form of communication. Interestingly, Habermas' work on communicative action also describes the conditions for authentic dialogue, which are integrated into Innes & Booher's collaborative rationality / DIAD model.

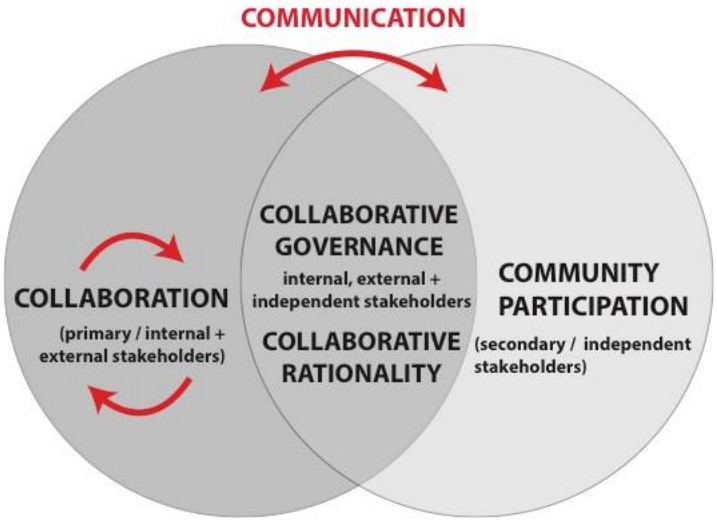


Figure 3.9: Communication in the design process and its relationship to collaboration, community participation, and stakeholder relations. Source: author.

Communication in general is of course vital for having a smooth design process. Shohet and Frydman (Shohet & Frydman) investigated communication patterns in building construction and found that effective communication has a significant impact on project cost, schedule, planning, quality, and safety criteria. Additionally, their work concluded that the construction manager's capacity to communicate effectively with the design team is crucial in overcoming the challenges in the design process, especially in the design and construction phases (ibid). According to Tran et al. (2017), effective communication practices depend on *the alignment of roles and responsibilities* of different stakeholders in a contractual agreement (Tran et al., 2017).

It is important to consider that stakeholders come with their pre-existing patterns of work activities, specialized work languages, different expectations and perceptions of quality and success, different organizational constraints and priorities (Sonnenwald, 1996) and different forms of visual representation. The various stakeholders, especially those in the central planning team, need to explore and integrate these differences in order for the collaborative and/or participatory process to run smoothly. This may also include integrating scientific, technical, and lay knowledge. When different stakeholders challenge each other's working methods, Sonnenwald (Sonnenwald) refers to this as "contested collaboration." (p. 279)

While it is difficult to find studies on visual communication or even communication more broadly in the design process pertaining to eco-districts, a few studies have been undertaken in other fields. In the fields of architecture and engineering, Senescu et al. (2014) argue that designers struggled to communicate, arguing that "[d]esigners do not communicate the process effectively and efficiently, making collaboration within project teams challenging." (Senescu et al.) As an example, they demonstrate how certain members of the design team may use processes that are opaque to other members of the design team, with can lead to unnecessary and unpleasant rework (ibid). They also argue that members of design teams struggle to share processes and to understand each other's processes. In the field of engineering software design, Sonnenwald examines communication in the integrated design process, involving the collaboration of professionals from divergent disciplines. She noted the frequency of communication breakdowns in the design team as one of the top three problems in the design process. Curtis et al. (1988) identify several factors that influence communication breakdown between designers and developers. Such factors included: skills of individuals, existing incentive systems, different representational formats, rapid change, local jargon, breakdown of information capture (i.e., overwhelming amounts of information), and cultural norms for individual behaviour.

Aside from communication breakdowns, however, there is little research on the ways that collaborative design or planning teams actually innovate in their visual communication in order to create a shared language and/or to distill complex information into sizeable bites. Researchers in the Design Process Management field (DPM) research and develop methodologies for

overcoming communication challenges in order to increase efficiency and optimization in the design process. These usually come in the form of management software (Eppinger; Steward; Tang et al.) but also other collaborative software, such as Building Information Modelling (BIM), an intelligent 3D model-based process for architects, engineers, and construction professionals that is updated in real time (AutoDesk, 2018). However, as will be demonstrated in **Chapter 6: the BREEAM-Communities pilot project in Malmö, Sweden,** there is a strong link between visual communication, collaboration, and creative problem-solving that deserves further attention. Figure 3.10 below summarizes the anticipated results or benefits that may arise for strong (visual) communication when certain conditions are met (column on left hand side).

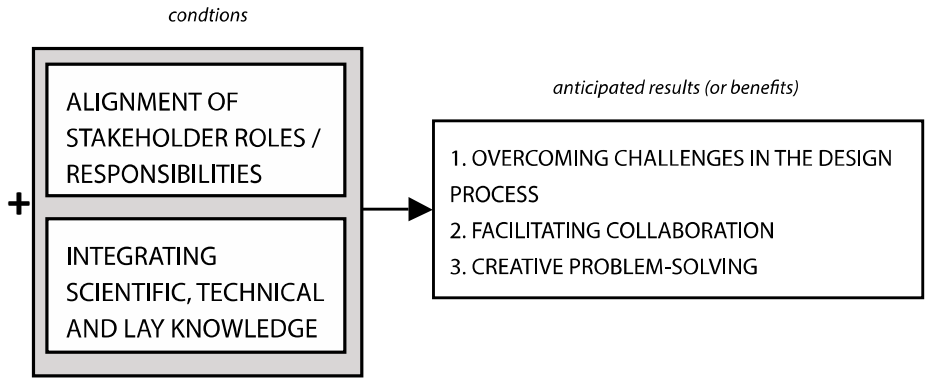


Figure 3.10: Summary of the conditions for and anticipated benefits of strong (visual) communication. Source: author.

3.4.5 Summary of the conceptual framework: the process-based approach

The previous sections discussed four concepts that surfaced in interviews with stakeholders involved in eco-district pilot projects in three case studies. Some of these concepts surfaced in the literature review and were of no surprise to the author; however, the concepts of visual communication and stakeholder relations were largely absent from the literature on eco-districts, eco-district frameworks, and the connected fields of sustainable urban development, regenerative design, urban ecology, and resilience, and thus represent new contributions to the literature. Figure 3.11 presents a conceptual framework for a process-based approach to neighbourhood sustainability frameworks. This conceptual framework illustrates the different questions that determine the framing, the external factors that may put pressure on

the pilot project process, and the four dimensions of the process-based approach presented in the previous section. This approach is applied to analyze the case studies in chapters 5-7.

The conceptual framework situates the neighbourhood sustainability frameworks at the centre of other important elements – collaboration, visual communication, community participation, and stakeholder relations – in order to illustrate that sustainability frameworks and tools do not exist in a vacuum. On the contrary, when applied in real-life projects, they are influenced by who is at the table, how decisions are made, what types of partnerships are formed, the stakeholder roles and responsibilities that are established, and the quality and forms of communication between these different stakeholders. As will be shown in the case study chapters, they are also influenced by internal and external factors. This conceptual framework is meant to be quite general, to help guide the reader towards the major themes and relationships between themes that will be discussed in the case study chapters. Based on the results from applying this conceptual framework to the three case studies, the final Chapter will propose a more comprehensive "process-support" framework, projecting into the future what the third generation of neighbourhood sustainability frameworks might look like.

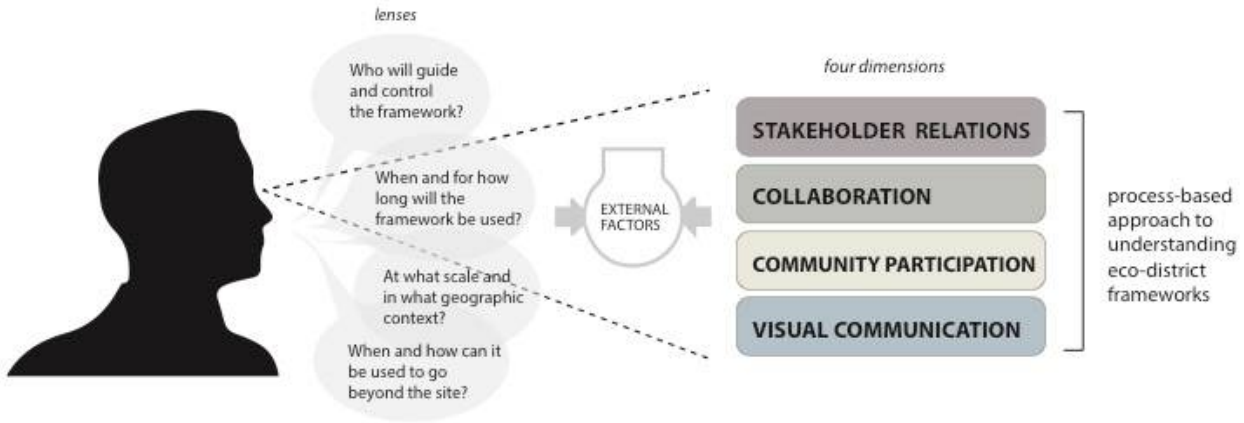


Figure 3.11: Conceptual framework for a process-based approach for neighbourhood sustainability frameworks. Source: author (diagram design inspired by Lizarralde et al., 2017).

CHAPTER 4

Using Qualitative Research in Three Eco-district Pilot Project Case Studies

This chapter summarizes the research methodology and methods. The research project uses a constructivist approach, which is compatible with a qualitative and exploratory methodology. It also uses the multiple case study methodology, and the justification for this methodology is explained, as well as the reasons for selecting three case studies. This chapter also explains the research methods (semi-structured interviews with members of the design teams of the three pilot projects and primary and secondary source documents analysis), the data analysis and interpretation methods (coding using nVivo software), strategies for validating the findings, and how ethical issues were dealt with in the research project.

Chapter 4: Using Qualitative Research in Three Eco-district Pilot Project Case Studies

4.0 Overview of this chapter

While the previous chapter described the theoretical framework for this research project, this chapter goes into detail about the research design. This research is exploratory since it looks at the subject of neighbourhood-scale sustainability frameworks in a new way, a way that is focused on the people that employ the frameworks. To use Neuman's definition, "Exploratory research is research whose primary purpose is to examine a little understood issue or phenomenon and to develop preliminary ideas about it and move toward refined research questions." (Neuman, 2013) It explores how these frameworks affect their ways of practicing – their ways of framing problems, of collaborating with others, of communicating, of strategizing. It touches on the challenges they faced and how and if they overcame them. This exploratory, qualitative approach to studying neighbourhood-scale sustainability frameworks is quite innovative, since most studies tend to focus on sustainability outcomes and metrics and are studied from a mainly quantitative perspective.

A quote by Creswell (2013) summarizes quite well the research approach, as it brings together qualitative research design, inductive reasoning, and a constructive epistemology: "[A] *qualitative* approach is one in which the inquirer often makes knowledge claims based primarily on constructivist perspectives (i.e. the multiple meanings of individual experiences, meanings socially and historically constructed, with an intent of developing a theory or pattern) or advocacy/participatory perspectives…." (Creswell, p. 18) This chapter explains how in order to answer the research questions, this research project uses a constructivist approach to build an understanding from research in three neighbourhood-scale pilot projects where sustainability frameworks were used. More specifically, a particular type of constructivism that is transdisciplinary was selected in order to deal with the complexity of sustainable neighbourhoods. The research project is qualitative and uses inductive reasoning, and this chapter explains the reasons for choosing these research approaches. This chapter also explains the choice to use multiple-case studies, how these case studies were selected, what types of data

were collected, and how the data was analyzed. Finally, it also discusses ethical issues and ways to validate the findings. Throughout the chapter, the challenges along the way are discussed openly in the hopes that the author (and other readers) can learn from these challenges. Table 4.1. gives an overview of the research design.

According to Cresswell (2014), the appropriate format for a methodology proposal includes: 1) philosophical assumptions and worldview of the research; 2) research design; 3) role of the researcher; 4) data collection procedures; 5) data analysis procedures; 6) strategies for validating findings; 7) anticipated ethical issues. This chapter therefore uses Creswell's proposed format to guide the structure of this chapter, although some minor adjustments were made. Table 4.1 provides a summary of the dissertation's worldview, theoretical perspectives, epistemology, methodology, and methods, which are all described in more detail in the chapter.

Table 4.1: Overview of my research design. Source: author.

Worldview / paradigm	**Theoretical perspective(s)**	**Epistemology**	**Methodology**	**Methods**
Ecological/ Whole Systems worldview	Transdisciplinarity Radical ecology	Transdisciplinary constructivism	Qualitative Inductive Multiple-case study	Semi-structured interviews Documents analysis Observation

4.1 The transdisciplinary constructivist epistemology

In order to build an understanding of how neighbourhood-scale sustainability tools were employed in pilot projects, and how this application impacted the design process for the design team members involved, a constructivist approach and a transdisciplinary epistemology are used. This approach will be referred to hereafter as *transdisciplinary constructivism,* described later on in this section.

According to Creswell (2014) and others, there are four main types of knowledge claims: post-positivism, advocacy / participatory, pragmatism and constructivism. The constructivist approach stands in contrast to the classical positivist model of research, which posits that universal truths exist and can be tested in reality. Constructivists, by contrast, do not believe in universal truths, but in multiple perspectives and meanings. From within these multiple

perspectives, knowledge can be constructed (rather than 'found' or 'discovered'). Some key experts on constructivism include Schutz (1962), Berger and Luckmann (1966), Gergen (Gergen), Mertens (Mertens), and others. One of the first social constructivist texts is by Berger & Luckman, where they begin the book by stating, "The basic contentions of the argument of this book are implicit in its title and sub-title, namely, that reality is socially constructed and that the sociology of knowledge must analyze the process in which this occurs." (p. 13) Their term *sociology of knowledge* is therefore concerned with the social construction of knowledge (ibid, p. 15). Schwandt (2000) adds to this, "We do not construct our interpretations in isolation but against a backdrop of shared understandings, practices, and so forth." (Schwandt, 2000, p. 197) Creswell provides a very simple description of a constructivist approach to qualitative research. He explains that it is an approach to understanding the world around us, where "meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas." (p. 8)

Constructivist researchers recognize that their own background shapes how they interpret their surroundings and acknowledge their own biases. It follows that in the data analysis portion of the research project, that the analysis is a personal interpretation of the data that the researcher then tries to validate by different means. During data collection, the researcher usually asks sufficiently broad questions so that participants can construct meaning. As Creswell explains, the more-open ended the interview questions, the better.

Several characteristics are associated with the constructivist approach, and some of them are identified by Crotty (1998):

- Meanings are constructed by people as they engage with their surroundings. Qualitative researchers tend to use open-ended questions so that participants can express their views
- People make sense of their world based on their historical and social perspective; thus, qualitative researchers tend to visit the context and gather information personally and make interpretations of their findings.

- This generation of meaning is always social and arises from interaction with communities of people. The process of qualitative research is usually inductive, with the researcher generating meaning from the data collected in the field

Another characteristic of constructivism is the assumption that 'reality' and 'knowledge' are socially relative. As Berger and Luckmann (1966) note, what is 'knowledge' to a criminal is different than the 'knowledge' of a criminologist (p. 15). A constructivist epistemology is usually used in *qualitative* and *inductive* research. Furthermore, Denzin & Lincoln explain, "The constructivist paradigm assumes a relativist ontology (there are multiple realities), a subjectivist epistemology (knower and respondent concrete understandings), and a naturalistic (in the natural world) set of methodological procedures." (N. K. Denzin & Lincoln, 1994)

But is constructivism alone effective enough for dealing with the complex problems posed by the sustainability, regenerative design and resilience discourses? A few authors argue that not only does knowledge in these domains need to be constructed, but it needs to be constructed from different perspectives, namely different *disciplinary* perspectives. For instance, Robinson (Robinson) argues that "because of its inherently complex, multi-faceted and problem-based focus, the sustainability field represents a paradigm case of issue-based interdisciplinarity." He continues, "This amounts to recognizing the importance and legitimacy of multiple knowledge domains," (ibid) which is consistent with the constructivist approach. It is for this reason that the epistemological approach for this research project is referred to as *transdisciplinary constructivism* (Pearl & Oliver, 2015). Transdisciplinary constructivism can be described as a particular branch of social constructivism that is based on the construction of knowledge based on different disciplinary perspectives, and the collaboration between such disciplines in framing this knowledge.

Després et al. (Després et al.) explain the differences between multidiscinplarity, interdisciplinarity, and transdisciplinarity. In multidisciplinary research, each discipline works in a self-contained manner, while in interdisciplinary research an issue is approached from a range of disciplinary perspectives integrated to provide a systemic outcome (Bruce et al., 2004). In contrast, the word transdisciplinary is not confined to scientific research and has been used since the 1970s in debates about teaching and professional practice. The Latin prefix "trans" denotes

transgressing the boundaries defined by traditional disciplinary modes of enquiry. Despres et al., p. 35) For Balsiger (Balsiger) and Després et al. (Després et al.), transdisciplinarity signifies the ordering of knowledge around complex and heterogeneous domains rather than conventional disciplines. From within an ecological worldview, knowledge is thus co-created through a collaboration of different actors, including but not limited to scientists, civil society, practitioners, and the public and private sectors (ibid). Moreover, transdisciplinary research often makes connections between theoretical frameworks and professional practice (Deprés et al., p. 36), and thus is entirely appropriate for this research. The information collected from decision-makers, designers, developers and citizens form an integral part of the research. The characteristics of transdisciplinary research are described in figure 4.1.

1) Mode of knowledge production characterised by its hybrid nature, non-linearity and reflexivity, transcending any academic disciplinary structure.
2) Tackles complexity in science and challenges knowledge fragmentation, dealing with research problems and organisations that are defined from complex and heterogeneous domains.
3) Accepts local contexts and uncertainty; it is a context-specific negotiation of knowledge.
4) Includes the practical reasoning of individuals with the constraining and affording nature of social, organisational and material contexts.
5) Requires close and continuous collaboration between actors during all phases of a research project, through "mediation space and time".
6) Often oriented toward action, making linkages not only across disciplinary boundaries but also between theoretical development and professional practice.
7) Frequently deals with real-world topics, generating knowledge that not only addresses societal problems but also contributes to their solutions.
8) Generally aims at understanding the actual world and at bridging the gap between knowledge derived from research and decision-making processes in society.

Figure 4.1: Characteristics of transdisciplinary research. Source: Lawrence & Després, 2004. Published with permission.

One of the reasons why the epistemologies of constructivism and of transdisciplinarity work so well together is that they both are lined to complex systems thinking and an ecological

worldview. Indeed, complex systems thinking is an inherent characteristic of transdisciplinary thinking. Designing and planning a sustainable neighbourhood is a complex problem that requires knowledge and collaboration from many different disciplines, including architecture, urban planning, civil engineering, water management, landscape architecture, ecology, and so forth. Beyond knowledge from these different disciplines, it also requires everyday knowledge of inhabitants. Thus, transdisciplinarity can take on many different forms: transdisciplinary collaboration between different disciplines in an academic setting; transdisciplinary collaboration between different practitioners in a professional setting; and transdisciplinary collaboration between academics *and* professionals. In the case of sustainable neighbourhood pilot projects, we are primarily concerned with transdisciplinary collaboration between professionals.

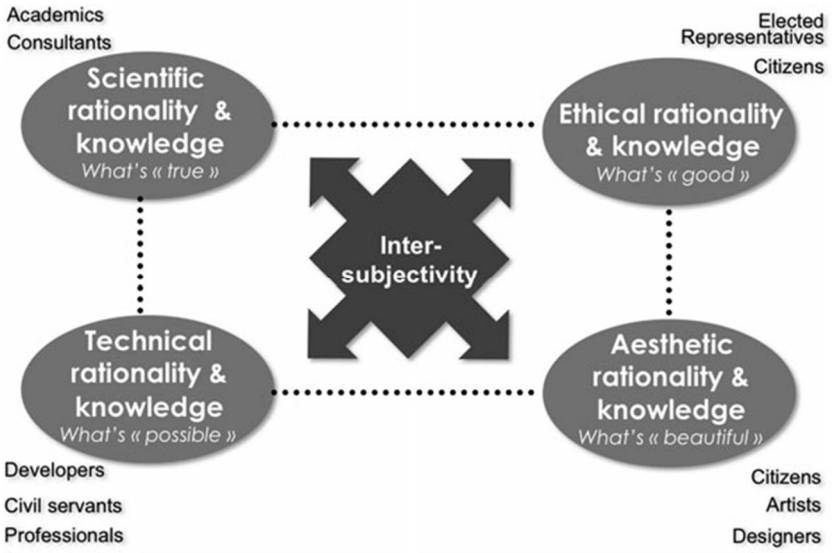


Figure 4.2: Example of how transdisciplinary knowledge is created: GIRBa's model of knowledge production for complex problems. Source: Després et al., 2011, p. 45. Published with permission.

4.2 Research design: a qualitative, exploratory approach to studying neighbourhood sustainability frameworks in three case studies

A qualitative, inductive research approach is necessary for answering the research question. Moreover, qualitative research is very much underutilized in the field of sustainable neighbourhood planning, and specifically with respect to sustainability frameworks and tools.

Most academic studies use a quantitative approach and use methods such as cross-case analysis, comparative analysis, and so forth. A qualitative approach, however, can surface very insightful information about how professionals feel about these sustainability frameworks; how they were applied; what the professionals learned; how the frameworks should be improved, and so forth.

Qualitative research often goes hand in hand with a constructivist epistemology and it is described by Denzin & Lincoln (2005) as crosscutting disciplines, fields, and subject matters, and so also fits well within a transdisciplinary epistemology. However, it has no set paradigm, theory or specific set of research strategies (Y. S. Denzin & Lincoln, 2005). On the contrary, qualitative researchers are sometimes referred to as *bricoleurs* (ibid), who quilt together their own understandings of a phenomenon based on a combination of multiple methodologies, data, perspectives, and so forth. Qualitative research has its roots in cultural anthropology and American sociology (Creswell, 2013), and is described by Denzin & Lincoln in *The Handbook to Qualitative Research* as follow:

> Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them. (Y. S. Denzin & Lincoln, 2005)

Its intent is to understand a social situation, event, role, group or interaction in an investigative process where the researcher makes sense of the situation or interaction by contrasting, comparing, replicating, cataloguing or classifying the research object (Creswell, 2013). Moreover, as was criticized in the previous chapters of this dissertation, much of the sustainability research is much too focused on *outcomes* and does not give adequate recognition to *processes.* Qualitative research offers a platform for new understandings of different processes in sustainability discourse and can be complementary to existing outcome-oriented, mainly quantitative studies. Indeed, qualitative research "focuses on the process that is occurring *as well as the product or outcome*. Researchers are particularly interested In understanding *how*

things occur" (Cresswell, 2003; emphasis by author).[8] Fraenkel and Wallen (1990) and Merriam (2009) also discuss the focus on processes and 'how' questions in qualitative research.

Rallis and Rossman (1998) mention several characteristics of qualitative research, which clearly follow the logic of constructivism:

- It often takes place on site where the researcher can develop a level of detail about the site and participants and become more involved in their experiences
- It uses multiples methods and often use active participation by participants
- Traditionally, methods include interviews, open-ended observations and documents
- It is emergent and not predetermined. The researcher's questions will often change over time and become more refined
- It is fundamentally interpretive. The researcher filters the data through a personal lens
- It is reflexive in the sense that the researcher reflects on a person and how his /her background shapes the study
- The researcher uses complex reasoning that is multi-faceted, iterative and simultaneous

Flick (2008) adds to these characteristics that qualitative research is interested in the perspectives of participants and in the everyday practices and everyday knowledge of a certain issue under study. It is able to capture the individual's point of view (Y. S. Denzin & Lincoln, 2005), to examine the constraints of everyday life, and to provide rich descriptions (ibid).

[8] Constructivism also tends to focus on processes, rather than outcomes: "Constructivist researchers often address the "process" of interaction among individuals." (Creswell, 2013, p.8)

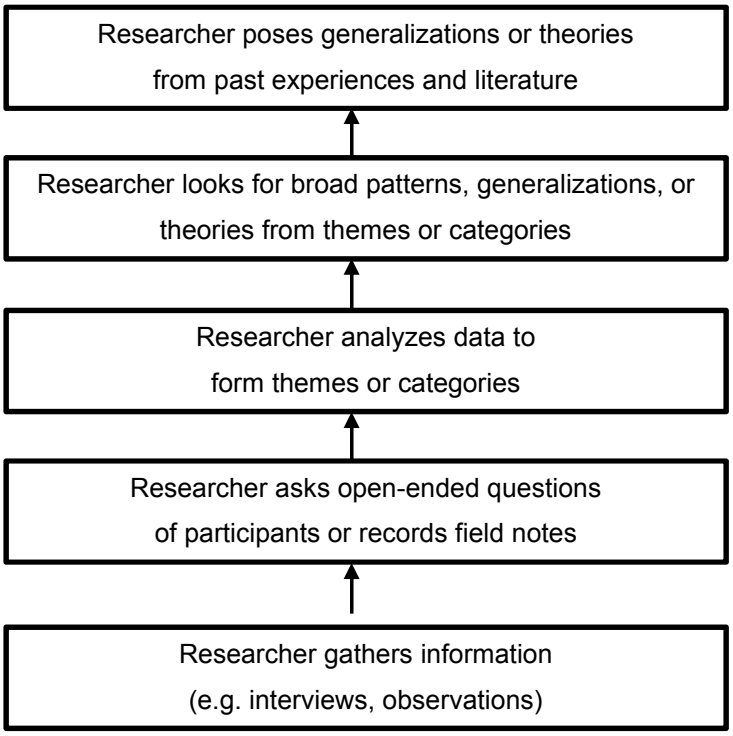


Figure 4.3: The inductive logic of research in a qualitative study. Source: author. Based on Creswell, 2002, p. 132. This research project uses a mix of induction and deduction, the 4 themes selected to analyze the case studies representing an inductive step. Deduction was then used when applying existing theoretical models to analyze the case studies, and some of these models were expanded on.

A major challenge with exploratory and rather inductive research is that the researcher often must adapt to surprises along the way. The research project can go off in a new direction; the researcher may have to do additional research in order to integrate new concepts; the researcher may have to reformulate the research question in order to fit the results; the researcher may have trouble planning out the research project in terms of time and other factors, because of the unknowns. This makes the research project evolve in an iterative fashion, often leading the researcher to return to previous steps in the research project and adapt them based on new circumstances.

4.2.1 Reasoning behind the choice for qualitative research

There are several reasons for adopting a qualitative, inductive research approach in order to answer the research question. This choice in methodology is justified for the following reasons:

1) the qualitative approach is generally accepted for when a concept or research area is "immature"" due to lack of theory in previous research (Creswell, 2013); 2) available theory is inadequate and does not take account process outcomes; 3) the nature of the problem and research question are not suited to quantitative measures; 4) there is a need to explore the phenomenon of real-life application of neighbourhood sustainability frameworks and to develop a process-based theory; 5) it fits well from within a 'regenerative design' framing, since regenerative design authors emphasize *process*, systems thinking, stakeholder engagement, and wider collaboration; 6) it fits within an ecological worldview / paradigm and constructivist epistemology; 7) it allows the researcher to collect open-ended, emerging data in order to develop themes and build theory.

4.2.2 The multiple-case study approach: three sustainable neighbourhood pilot projects

Now that this research project's constructivist epistemology and qualitative, inductive approach have been explained, it is time to describe the case studies. The research project focuses on the application of neighbourhood sustainability frameworks in pilot projects in order to learn from the valuable experiences of the design team in applying them. A single case-study approach would not have been appropriate in this case, since every pilot project is so complex and so different; the types of tools, the timing, the development models vary so much from case to case. It was therefore determined that a good cross-section of different cutting-edge frameworks involved in pilot projects would be the most effective methodology for getting insight on the design process. There are also several other reasons that justify choosing to use multiple-cases rather than a single-case study. For one, as Yin explains, "The evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust." (Robert K Yin, 2009) In other words, having two or more case studies can blunt criticism and skepticism about the results (ibid, p. 62). Another important distinction in case study research: whether the case study or case studies are intrinsic or instrumental. Stake (1995) explains that intrinsic case studies are used when a researcher wants to study something about a *particular* case, whereas intrinsic case studies are used to provide insight into an issue or to redraw attention to a generalization. The case studies therefore may be similar or dissimilar (ibid)

but are chosen because it is believed that studying them will give insight into an even larger collection of cases (ibid, p. 446).

With respect to the last point, it is important to note that the case studies in this research project do not serve as a basis for comparison – although the reader may be naturally tempted to draw comparisons.[9] The principle of 'replicability' (an often desired result in multiple-case study research) is not applicable here. On the contrary, each case study is so unique, and it becomes almost impossible to compare design processes. To illustrate this point, the research project could have chosen to look at the impact that one specific framework had on the design process in several different case studies (for example the BREEAM Communities framework in three British cases), and the framework in question would have been the unit of analysis. This, however, was not the primary goal of the research. The research is interested in the phenomenon of neighbourhood sustainability frameworks in general (ranging from more product-based to process-based), especially those with aspirations of moving towards regenerative and resilient communities. The unit of analysis is therefore the design process, rather than a specific framework. A strength of this approach is that, based on stakeholders' experience applying the frameworks, it helps discover new concepts important for the process-based approach. Another strength of this approach is that it allows for uncovering contextual richnesses that can be studied in depth in a particular case, rather than examining universal variables in each. It therefore allows for developing a unique, detailed narrative for each case study and is arguably more apt for capturing the complexity of relationships in the case studies than in a rational, linear cross-case analysis. An obvious weakness, however, is that these results will not be scientifically generalizable.[10] But intrinsic case studies are a small step toward grand generalization (Stake, 1995). Moreover, even if the case studies are not presented as a comparative study, this does

[9] Comparative case study analysis can be useful in certain instances when it is appropriate for answering the research questions. It is useful for comparing a similar unit of analysis, for example if the research question were "How does LEED certification in institutional buildings impact conversations about sustainability?", a comparative case study could be designed to look at several LEED projects and interview architects and engineers about the conversations they had about sustainability. However, exploratory research projects may sometimes be better suited for intrinsic, non-comparative case studies.

[10] The researcher acknowledges the tradeoff between scientifically generalizable results (made possible through a comparative analysis) and contextual richness (made possible through intrinsic, exploratory case studies).

not prevent the researcher from drawing strong conclusions about the phenomenon studied. On the contrary, the final chapter presents important transversal lessons learned.

Yin is perhaps one of the greatest authorities on the case study methodology. He explains, "The case study relies on many of the same techniques as a history, but it adds two sources of evidence not usually included in the historian's repertoire: direct observation and […] interviewing." (Robert K. Yin, 2003, p. 8) An important feature of a case study is that it is bound in time and activity (Creswell, 2013) and this activity is often referred to as the case study "unit" or "unit of analysis." *Qualitative* case studies provide different types of information than quantitative studies. For instance, as Thomas (2010) explains, "A case study will not tell you the kinds of things that an experiment will tell you about causation… What it does offer you is a rich picture with many kinds of insights coming from different angles, from different kinds of information." (p. 21) What is important in qualitative case studies is triangulation, experiential knowledge, and understanding contexts and activities (Stake, 1995). Usually in qualitative case studies, the researcher brings experiential knowledge about a case or a few cases and pays close attention to the context (ibid), in other words the historical, economic, political, social, and other factors that influence the particular case.

Why do we study cases? Because they belong to some sort of grouping that a researcher wants to study and develop knowledge about. For example, the researcher might want to understand similarities, differences, or causes in a type of case. There are several other reasons for choosing the case study methodology:

- "Case studies are likely to produce the best theory" (Walton, 1992)
- It has conceptual validity because it identifies concepts and variables of interest
- It has heuristic impact by constructing new theories or extending concepts and theories
- It helps to identify causal mechanisms
- It is able to capture complexity and trace processes over time and in space
- It enables researchers to adjust or calibrate measures of abstract concepts into concrete standards

- It can allow the researcher to elaborate on an entire situation holistically and incorporate multiple viewpoints.
- It is appropriate for exploratory research and helps answer "how" and "why" questions (Robert K Yin, 2009)

The process of case study selection – where challenges were encountered

The initial intent of the research project was to select exemplary or even 'typical' examples of neighbourhood-scale regenerative design frameworks in order to understand the design processes employed. After doing some research on existing regenerative design frameworks, however, it became evident that there were no adequate case studies available. The regenerative design frameworks and tools featured in *Building Research & Information*'s special 2012 issue on regenerative design, for instance, were largely developed in academic settings by research groups and the like and had yet to be tested in practice. Bill Reed & Pamela Mang's framework for their consultancy, Regenesis, was an option that was explored; however, their case studies tended to be rural or peri-urban, and often more at the regional rather than neighbourhood scale.

At the time that case studies were being selected for the research project, an obvious candidate for a case study would have been a Living Community (as part of the International Living Futures Institute's Living Community Challenge 1.0 framework). ILFI's standards are by far recognized as the most stringent and 'regenerative' on the market; however, at the time the case studies were being selected, there were no projects registered under LCC 1.0.. Some early pilot work did occur in a neighbourhood in San Francisco, where two LCC consultants from ILFI were flown down to facilitate a two-day workshop with a local community. A series of "patterns" (in the spirit of Christopher Alexander's patterns) were developed and discussed during the two-day workshop. This was a promising lead, and so the researcher flew down to San Francisco to interview participants from this two-day workshop. Since the results of the workshop were not necessarily meant to be implemented, however, it was determined that this case study would be too different from other case studies in the dissertation.

Short of using existing regenerative design tools published in well-known journals or ILFI's new LCC standard, a new strategy for case study selection needed to be developed. In the optic of seeking out best-practice neighbourhood sustainability frameworks, the focus turned to frameworks that at least incorporated elements of regenerative design – frameworks that were recognized by industry as setting the highest standards for sustainability, ones that incorporated community participation and evaluated the design process, ones that incorporated disaster-risk and resilience criteria, and ones that were very holistic in coverage. The aim was to study the most innovative frameworks available on the market in their application in pilot projects. Purely performance-based frameworks such as LEED-ND and CASBEE UD were not considered since they are part of the technical-rational paradigm, which focuses only on outcomes. By narrowing down the criteria slightly, four new prime candidates emerged, all of which had had very recent pilot projects: the EcoDistricts framework and five pilot projects in Portland, USA; the DGNB framework and Nordhavn pilot project in Copenhagen, Denmark; the BREEAM-Communities framework and Masthusen pilot project in Malmö, Sweden; and the Ecological Urbanism framework and Superblocks pilot project in Barcelona, Spain. The researcher was the recipient of a Michael K. Smith travel award from the SSHRC which allowed her to travel for three months to the above locations to do her fieldwork and conduct interviews and site observations in each of the four cases. Ultimately, however, the DGNB Nordhavn case was dropped as a key case study since it was found out during the interview process that the DGNB framework was applied as an afterthought in four pilot projects in Copenhagen (as an early test of the framework), but after the masterplans had already been developed. Accordingly, the interviews did not give major insight into the design and planning process. In the end, only the EcoDistricts, BREEAM-C and Ecological Urbanism pilot projects were kept for the multiple-case study.

But even in narrowing down the scope, a challenge of the research is that these innovative frameworks are quite different and can be used at different times and in different development models (refer to Table 4.2 and Figures 4.4 and 4.3). Each case was also framed quite differently. Below is a summary of how the three eco-districts were framed (See Chapter 3: Theoretical Framework for a description of framing) in the three different pilot projects:

The EcoDistricts framework, the first of its kind in North America, is primarily a governance framework promoting a multi-actor approach but that has an assessment component, and it was applied to five pilot projects in Portland. This dissertation focuses on the two most urban pilots.

(1) *Framing the EcoDistricts Framework 1.0:* The Framework was tested in quite large-scale neighbourhood projects, one an existing business district, and the second, a brownfield site. The EcoDistrict Framework was brought in and tested after initiatives were already underway in Lloyd and South Waterfront, so PoSI and the City were able to piggyback onto these initiatives to promote the EcoDistricts concept. PoSi, who controlled the testing of the framework, with backing from the City of Portland's Bureau of Planning & Sustainability, facilitated in step 1 of the EcoDistricts Framework that memoranda of understandings be signed between the City, local TMAs, local neighbourhood associations, private businesses or developers, large institutions like hospitals or universities. While in Lloyd, private business interests took the driver's seat in the pilot project process, in South Waterfront, efforts were led primarily by South Water Community Relations, which also acts as South Waterfront's TMA.

The BREEAM-C framework is a development assessment standard that certifies projects based on their sustainability achievements, and it is mainly used by private developers. It is one of the very first neighbourhood sustainability frameworks that is intended to be used in the early planning phases and that mandates community consultation in all phases.

(2) *Framing the BREEAM-Communities Framework:* The BREEAM-C Framework was tested by the planning team in the Masthusen project, who included Diligentia (the developer), an internal sustainability consultant / Project Manager, an external sustainability coordinator, the BREEAM assessor, and occasionally, urban planners from the City of Malmö. Much like in the EcoDistricts pilot projects, the BREEAM-C Framework was brought in after a skeleton plan had already been submitted and was used over a period of a few years to certify the project, and afterwards, to ensure proper implementation. It was applied in this case to a brownfield site in Malmo's Western Harbour where there was not yet an existing community.

The Ecological Urbanism framework is a system of indicators used internally by the Urban Ecology Agency of Barcelona to diagnose a context at multiple, nested scales; but these same indicators also act as an assessment scheme. Many of the UAEB's indicators can be mapped using different techniques, and so there is a strong visual component to this framework.

(3) *Framing the Ecological Urbanism Framework:* This last framework is almost always used by the UAEB to justify the radical superblock proposal. In between the initial diagnosis and the final evaluation that will take place in the future, the City and District governments took charge of the superblock pilot project. The framework was used to assess a 3 x 3 block area in an existing medium density mixed-use neighbourhood in central Barcelona.

Each of these case study frameworks has its own embedded agendas, its own philosophy concerning the design process and implementing the framework, and its own degree of sought after transformative change in the built environment. In the end though, none of the case studies above espouse *all* the values described in the regenerative design, net positive, or resilience literature. But in their own ways, they all push the boundaries of sustainability, and perhaps practice -- in the BREEAM-C case by certifying a specific participatory master planning *process* and therefore going beyond traditional performance criteria, in the Ecological Urbanism case by both using a very holistic framework and by experimenting with a radical urban model of the "superblock" with co-learning alongside the community, and in the EcoDistricts case by providing a framework for bringing together multiple public, private and civic stakeholders. And each case study attempts to highlight lessons learned from the pilot project process.

Table 4.2: Summary table of three eco-district frameworks. Source: author.

EcoDistricts Framework	BREEAM-Communities	Ecological Urbanism framework
Framework used: EcoDistricts Framework 1.0 (pilot version)	**Framework used:** BREEAM Communities 1.0 bespoke version (pilot version)	**Framework used:** Ecological Urbanism framework (not a pilot version)
Framework administering body: Portland Sustainability Institute	**Framework administering body:** BRE Global	**Framework administering body:** Urban Ecology Agency of Barcelona
Type of framework: Collaborative governance framework with performance criteria used in beginning and end phases	**Type of framework** Development assessment tool with mandatory community consultation in all phases	**Type of framework** Indicator-based framework for sustainability diagnosis in pre-design and monitoring phases
When it was used: All phases of planning process.	**When it was used:** Only detailed planning stage.	**When it was or will be used:** Pre-design and post-occupancy.
Targeted users: Multi-actor governance bodies: Public-private partnerships University campuses, etc. Local communities Business associations Transportation Management Associations (TMAs)	**Targeted users:** Private developers Municipal governments Local communities (required in certain BREEAM-C credits)	**Targeted users:** Municipal governments District governing structures Regional governing structures *Local communities *Business associations * independent of the Eco Urbanism Framework
Scope of change aspired for: Limited to the eco-district, but contributing to city-scale environmental targets and in line with city-scale policies	**Scope of change aspired for:** Limited mostly to the eco-district, with aspirations to be a new hub for the Western Harbour.	**Scope of change aspired for:** Radical change of a neighbourhood via a transformational and catalytic project. The superblocks are meant to spread across the city.
Framework's purported focus areas: 5-step governance framework: 1) District organization 2) District assessment 3) Project feasibility 4) Project development 5) District monitoring Framework consists of different toolkits to help planning teams with process: engagement and governance, method (with KPIs), financing, policy support. KPIs include: equitable development, placemaking, social cohesion, air quality and carbon, water, energy, mobility, materials, habitat & ecosystem function	**Framework's purported focus areas:** Framework consisting of prescriptive sustainability criteria under different categories: • climate and energy • community • place shaping • biodiversity • transport • resources • business • buildings Mandatory community consultation in all phases.	**Framework's purported focus areas:** Primarily mapping-based indicator framework with 52 indicators under 4 main categories, 3 of which were applied to the Sant Martí case: • Compacity (land use, public space, mobility) • Complexity (urban complexity, green space and biodiversity) • Efficiency (urban metabolism) • Social cohesion (not included in case study)

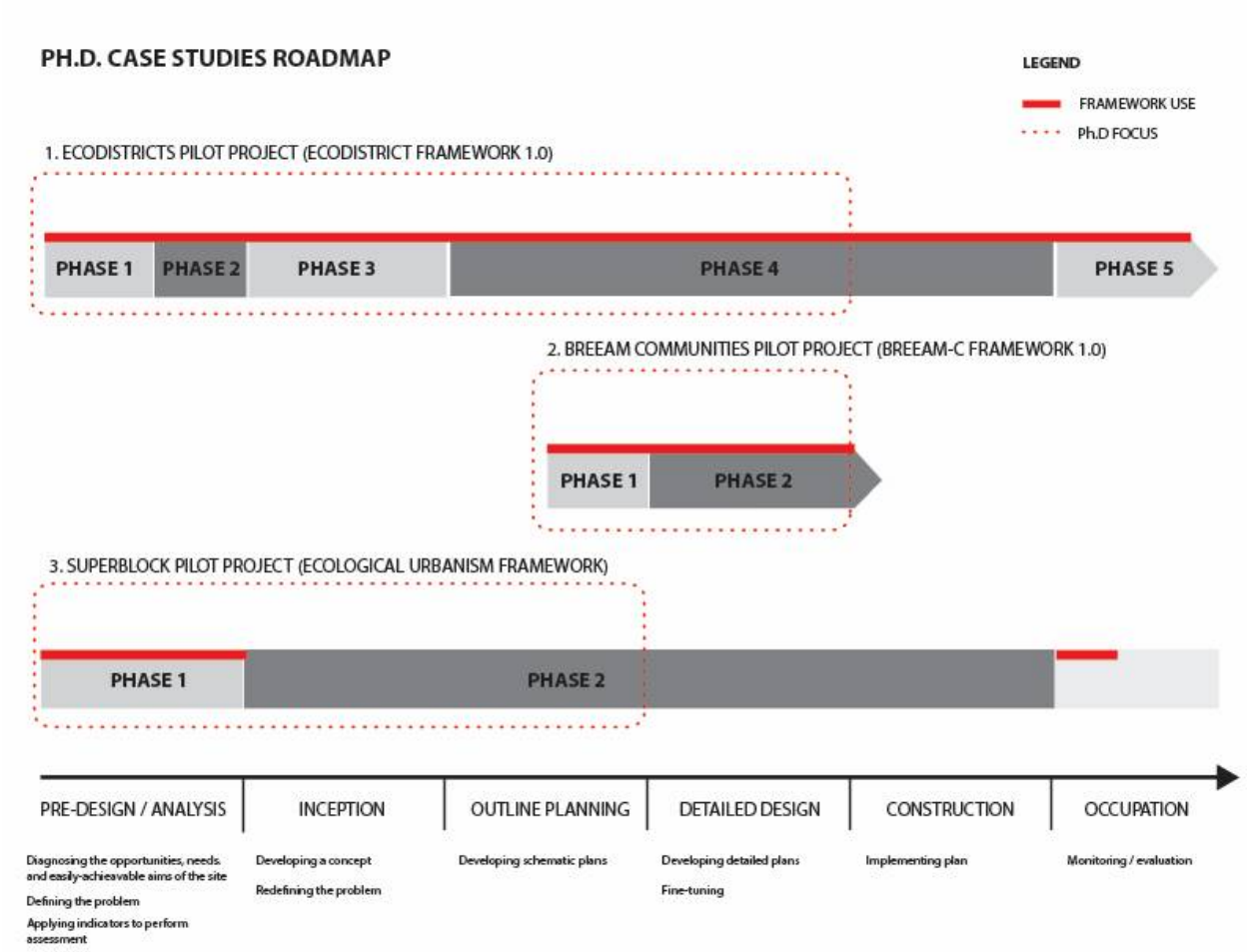


Figure 4.4: Ph.D. case study roadmap showing when neighbourhood sustainability frameworks were applied and the dissertation's time period focus. Source: author.

The test neighbourhoods in question are also very physically different from one another: in the case of Malmö, the Masthusen project is located on a 10-hectare site in the Western Harbour neighbourhood, an area once renowned for shipyards and car manufacturing, and an area that is today partially newly developed (very near the famous B001 site) and partially still underdeveloped and industrial. The Ecological Urbanism pilot project (a 16 hectare "superblock") in Sant Martí in Barcelona, on the other hand, is located in an established community not too far from the city centre. The South Waterfront EcoDistrict in Portland, USA is a former industrial zone that was rezoned as an Urban Renewal Area in hopes of providing more housing for people working downtown. It is therefore a brownfield site of 62 hectares, close to downtown, and recently connected to East Portland via a new pedestrian bridge.

Table 4.3: Summary table of three pilot project testing grounds. Source: author.

South Waterfront and Lloyd EcoDistricts (Portland)	Masthusen site (Malmö)	Sant Martí superblock site (Barcelona)
Pilot project context: Brownfield site (Southwest Waterfront) Existing urban business district (Lloyd District)	**Pilot project context:** Brownfield site (Western Harbour neighbourhood)	**Pilot project context:** Existing medium-to-high density residential / light industrial neighbourhood (Poblenou in Sant Martí District)
Approach to site boundaries: Sustainability outcomes and stakeholder engagement focused on within limits of the EcoDistrict sites	**Approach to site boundaries:** Sustainability outcomes focused within site limits; pubic space and consultation process enlarger to Western Harbour scale	**Approach to site boundaries:** Sustainability outcomes scale up when superblocks are multiplied; community participation at Sant Martí neighbourhood scale
Existing community: SW had no existing community and was fairly disconnected from surrounding communities. Lloyd was almost entirely a business district with almost no residences. Both therefore had low social, cultural and economic diversity.	**Existing community:** The Masthusen site had no existing community and therefore had low social, cultural and economic diversity. The surrounding Bo01 and Bo02 sites are quite affluent and not very diverse communities.	**Existing community:** The Poblenou neighbourhood of Sant Martí is a mixed residential / industrial. 58% of the population is native from Barcelona, 7% from the province of Catalonia, 14% from the rest of Spain, and 21% is foreigner (UAEB, 2015).
Existing/new: Lloyd was primarily an existing neighbourhood where several buildings could be retrofitted and a few new certified buildings built. SW was a new development.	**Existing/new:** Entirely new development. Development was focused on building new sustainable office and residential buildings and public space.	**Existing/new:** Existing neighbourhood. Focus on revitalizing public realm / public space and roads. A new market next to the superblock is on the planning agenda.
Density and urbanity: Lloyd (160 ha) in 2011 had a population of 1369, 82% of them are white, the median age was 44 and the average income was $35,000 USD (Program Officer from PoSI). Only 5% of the area was residential; 61% commercial. SW EcoDistrict is a 48 ha site where the population in 2013 was only 861, the average age was 46, and the average income $57,000 USD.	**Density and urbanity:** 10 ha site to be developed into 18 city blocks with 1350 new residences and 52,000m2 for offices, commercial and institutional functions.	**Density and urbanity:** 5580 residents on a 16 ha site. Dwelling density of 152 dwellings/ha and population density of 348 inhbaitants/ha 5m2 space / inhabitant >20 economic activities/ha (complexity indicator)
Problems of district: Lloyd: Not enough residences or life on the street in the evening, a number of vacant lots. SW: Lack of connectivity to the rest of the city, lack of infrastructure, need for housing close to work	**Problems of district:** Lack of affordable housing, site contamination, lack of community life (*vie de quartier*), opportunity to create a “hub” of activity for the Western Harbour	**Problems of district:** Poor air quality, not enough green space per inhabitant, traffic and noise pollution issues, outdoor thermal comfort issues (UAEB, 2015)

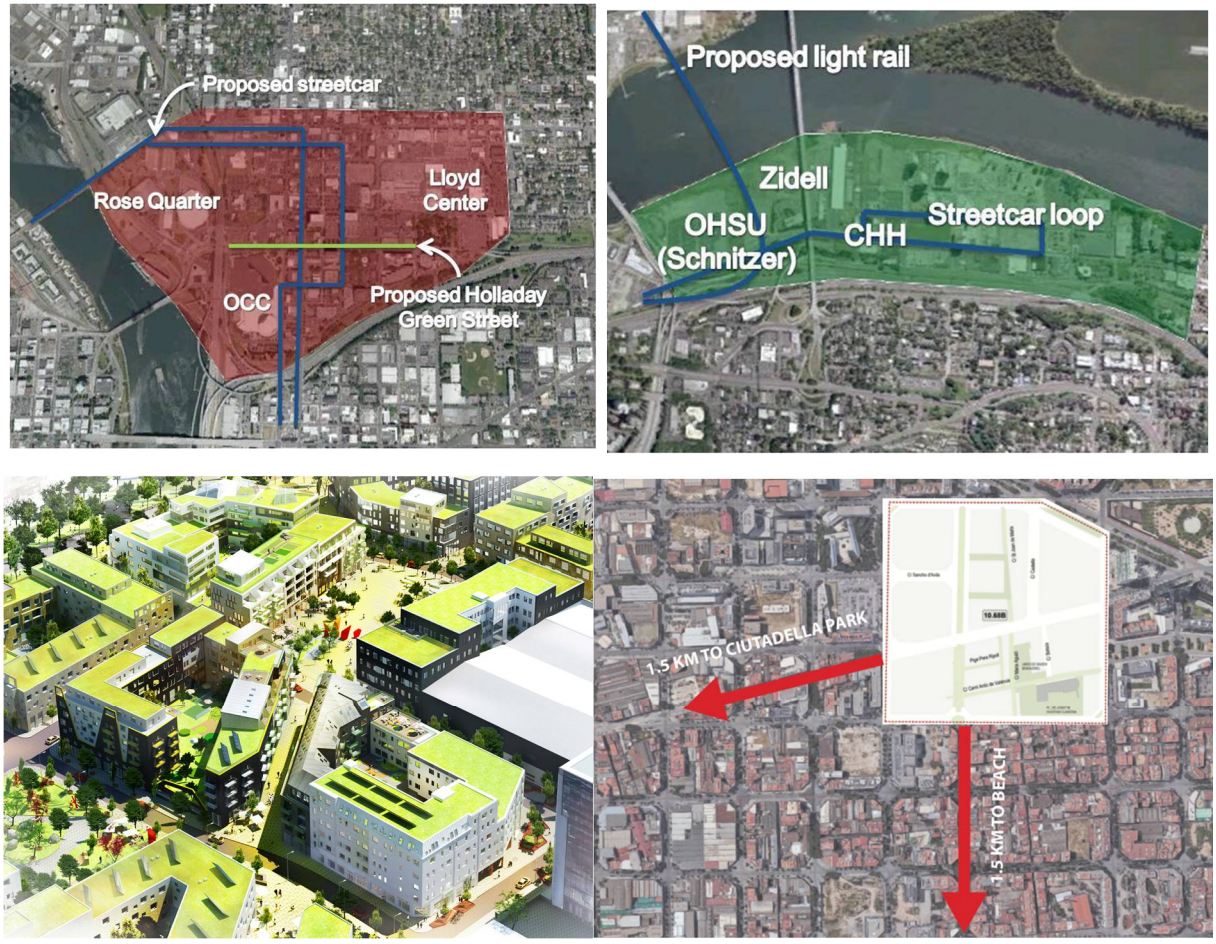


Figure 4.5: Images of the four pilot project neighbourhoods. Above: The Lloyd EcoDistrict (left) and South Waterfront EcoDistrict (right) (Compass Resource Management Ltd., 2010). The Masthusen BREEAM-C pilot project (bottom left) (Diligentia) and superblock pilot (bottom right) (author). Published with permission.

A methodology untouched

A missed opportunity for this research was to employ the Practical Action Research methodology, which fits very well within an ecological worldview and a constructivist epistemology. Practical Action Research might arguably be the most fitting methodology for an ecological worldview and for studies in regenerative design and development; moreover, using an action research approach and constructivist epistemology are very complementary (Lincoln in Reason & Bradbury, 2001), as both respond to practical problems, share the same epistemological assumptions, and rely heavily on the idea of 'constructed realities.' (ibid)

Neuman explains that Participatory Action Research is a type of research in which "the research participants actively help design and conduct the research study. It emphasizes democratizing knowledge-creation and engaging in collective action, and it assumes that political

knowledge emerges from participating in research." (Neuman, 2002, p. 30) As well, research participants in PAR take an active role in designing and carrying out the research and even may be involved in the problem definition and study implementation. They "cogenerate findings" with researchers in a collaborative process (Neuman, 2002, p. 31). PAR is rooted in the professional realm and in improving professional practice (Sagor, 1992) and stands in opposition to the Technical Rationality model, and instead, acknowledges that professionals possess tacit knowledge-in-action, as Schön would call it; and this knowledge has its own intrinsic value.[11]

Unfortunately, PAR was unrealistic in scope for this research project. It would have required adding time-consuming activities and would have extended the length of the doctorate significantly, as the researcher would have had to introduce participatory, co-learning activities with interview participants after absorbing the findings from the interviews. Next, the researcher would have had to report on the participatory activities to co-construct the theoretical framework with participants. The researcher very much hopes to collaborate on future research projects that employ the PAR methodology, for instance, in the context of larger research grants or post-doctoral fellowships; however, this methodology was unrealistic for the doctorate research project.

4.3 The role of the researcher

In qualitative research, it is recognized that the researcher's own background inevitably influences how the research is framed and how the data is interpreted and analyzed. The role of the researcher as the primary data collection instrument requires the research to state his / her biases, personal values and assumptions from the outset (Creswell, 2013) since the researcher "speaks from a particular class, gender, racial, cultural and ethnic community perspective." (Denzin & Lincoln, p. 21)

[11] For example, in her book, Wright (2015) describes a Participatory Action Research project in a school with disengaged youth in a working class, urban neighbourhood where school dropouts were high. Through a process of collaborative inquiry and open dialogue, the researcher was able to understand what was important for them, and then designed a tailored curriculum to keep them engaged. In this way, the youth participated in the design of their own curriculum – a curriculum that responded to their own, unique needs.

My perceptions of the importance of the design process were shaped by my own personal experiences as a student and architectural intern from the years of 2008-2017.[12] To begin with, I had decided to pursue a higher education degree in Architecture because I was passionate about sustainability issues and how architecture and planning could be platforms for creating a more sustainable built environment. After having read some books about passive buildings and vernacular architecture, I was disappointed when at architecture school I became aware of more technologically-biased, prescriptive definitions of sustainable architecture. I wondered about the "synergies" that could be created in order to create sustainable buildings in an affordable way. As I asked these questions, I became more and more interested in the *design process* and the types of tools and practices that could help practitioners towards more accessible, sustainable solutions.

As time went on during my architectural studies, I became introduced to the emerging field of regenerative design through my Master's supervisor, Ray Cole. This new literature fit very well within my own worldview that truly sustainable architecture could not be prescriptive and purely top-down, but was inherently connected to a specific context. Moreover, regenerative design favoured stakeholder engagement and a fair design process. This new literature very much influenced my Master's thesis, where I explored the ways in which synergies could be capitalized on in order to get the most out of the least in a social housing scenario. The passion for the 'hows' of creating integrated, synergistic designs to enhance affordability and sustainability eventually led me to pursue my doctorate at the Université de Montréal, where I was determined to understand the role of sustainability tools and frameworks in encouraging synergistic, integrated thinking among practitioners.

My professional experience also helped shape my views concerning the importance of the design process in architecture. At my first architectural position in Vancouver, our firm often hosted design charrettes with end-users in their institutional and cultural projects (for example in an engineering students' centre and several community centres). I found this experience to be

[12] It is also important to mention that before my Master of Architecture degree, I did a B.A. in International Relations at the University of Toronto – a program that I chose because it was interdisciplinary, mixing Languages, History, Economics, Political Science, and International Development. So it is unsurprising – and even logical – that my epistemological approach to research be transdisciplinary.

very enriching and helped us design better buildings that were more apt to be loved and appreciated by inhabitants and / or users. In Montreal, I also collaborated with L'OEUF Architectes on several projects that involved community consultation and / or charrettes. L'OEUF is a firm that is well-known for its work in sustainability and affordability, and engagement with communities and an Integrated Design Process (IDP) are core to its practice. Again, my experience in this milieu only furthered my drive to understand the importance of the design process in sustainable neighbourhoods projects.

Other points worth mentioning here are my prior experience with the Urban Ecology Agency of Barcelona, which I was first introduced to through my co-director Daniel Pearl in his course ARC 3640 Architecture Verte at l'Université de Montréal, and my prior exposure to literature and theory on urban resilience through my director, Isabelle Thomas. Danny introduced to me the UAEB's methodology and indicator-set and how different indicators can be grouped, depending on the context, and either scaled-up or scaled-down to understand relationships between building-block-neighbourhood-city-region. After being a teaching assistant for this course, I later had the opportunity to apply this framework to a case study in Montreal under a grant for CURA (Community-Universities Research Alliance). A challenge for this dissertation, therefore, was to treat the three case-studies in an even-handed way given the prior experience and familiarity with Ecological Urbanism and not BREEAM-C or EcoDistricts. Under Isabelle's supervision, I was introduced to new literature on urban and community resilience, and we collaborated together on several important papers that make the link between sustainable (or regenerative) design and resilience. Our most recent paper, submitted to *Risques Urbains,* in July 2018, explores to what extent France's écoquartiers (eco-districts) have made advances in resilient city-making. These experiences together have shaped my worldview and values, which in qualitative research, may inevitably influence how the data was analyzed and interpreted in this thesis.

4.4 Data collection procedures: semi-structured interviews and documents analysis

In order to study how stakeholders felt about using neighbourhood sustainability frameworks in pilot projects, and how and if this impacted the design process, several data

collection methods were used. The research primarily relies on semi-structured interviews; however, field observation and documents analysis (public and private documents) were also part of the case study research methods. According to C. Marshall and Rossman (2014), these make up three of four typical methods used in qualitative methods, alongside participation in the setting. Figure 4.6 summarizes the different types of data collected.

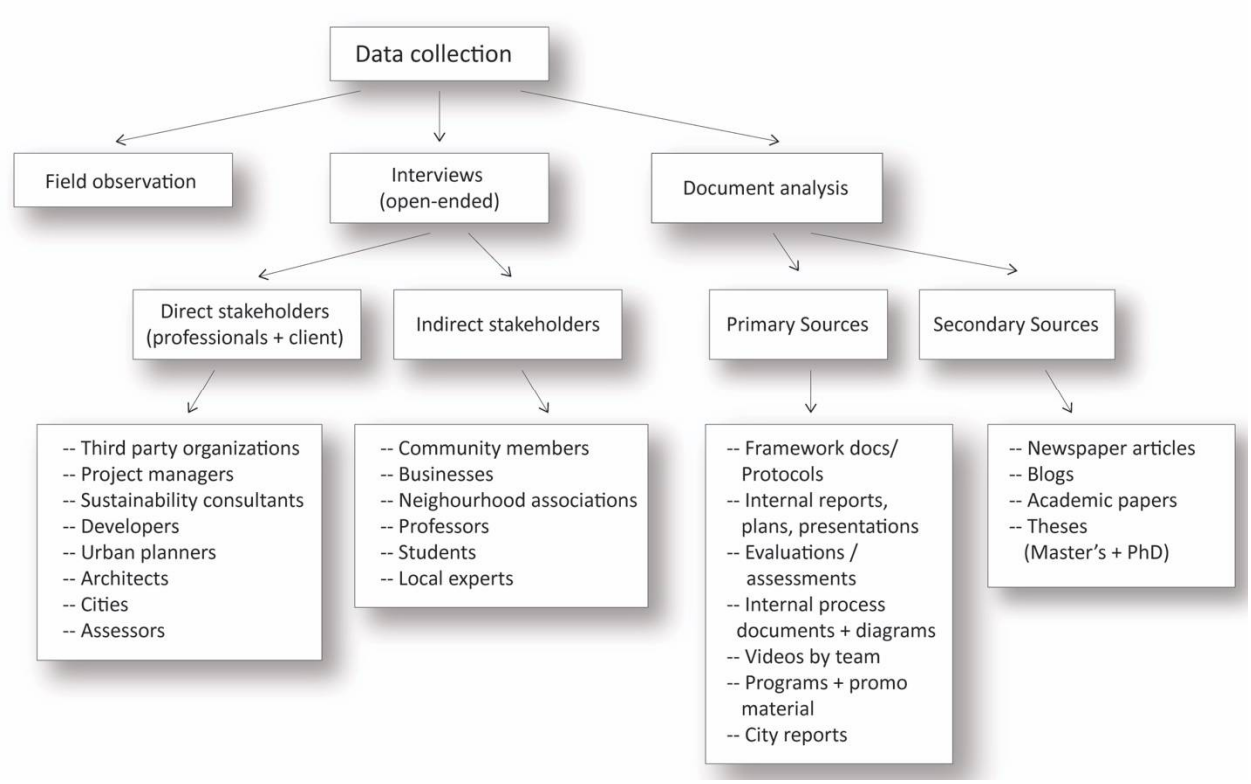


Figure 4.6: Different types of data collected for the case study research. Source: author.

Observation

Each of the three case studies involved site observation as one of the methods for data collection. According to Merriam (2009, p. 117), "observations take place in the setting where the phenomenon of interest naturally occurs." The author visited the pilot project sites, took photographs, and took observational field notes in a journal. Additionally, observational notes were recorded during and after interviews.

In the case of the Barcelona Superblocks pilot project, the researcher returned for a second field study in order to observe the pilot project simulation in the San Martí district. This

involved attending the project kick-off with architecture students involved in a one-week workshop to create temporary installations during the pilot project simulation as well as the mid-way critique and final critiques of the students' proposals. Other activities were planned for the second week, including three public debates, spinning classes, yoga classes, a public market, electric car and electric bike kiosks, public art, tree-planning, and so forth. The researcher attended all three pubic debates and recorded notes. She also attended almost daily activities described above and took notes and photographs of the goings-on. As well, a public "opinion board" was placed in one of the squares for residents to write post-it notes about how they felt about the superblock. These notes were all photographed and transcribed into a table in **Chapter 7: The superblock pilot project in Barcelona, Spain**.

Documents Analysis

This research uses a mix of public and private documents. Reviewing documents is "an unobtrusive method, rich in portraying the values and beliefs of participants in the setting." (Marshall & Rossman, 1999, p. 116) It uses what Merriam (Merriam) refers to as *popular culture documents*, which are public and so sometimes categorized under public records. This includes newspaper articles from various newspapers that published stories on the pilot projects, including but not limited to *The Guardian* (UK), *The New York Times* (USA), *La Vanguardia* (Spain), *El País* (Spain), *El Nacional* (Spain), *El Diario* (Spain), *El Periodico* (Spain), *Daily Journal of Commerce* (Portland, USA), as well as urban planning and architecture blogs. In addition, the official framework documents were consulted (the BREEAM Communities 2011 bespoke version, the Ecological Urbanism handbook, and the EcoDistricts Framework 1.0 and toolkit documents). The availability of documents was particular to each case study, and a list is summarized below and categorized by primary and secondary sources.

Table 4.4.: Summary of sources consulted in the EcoDistricts case studies. Source: author.

Primary documents	Secondary documents
• City of Portland and Metro websites • Portland Comprehensive Plans • Portland Climate Action Plan (2009) • Portland Central City Plan (1988) • The Portland Metro Climate Prosperity Project (PMCPP working group) • "Making EcoDistricts Work" vision document by experts • EcoDistricts website • EcoDistricts concept paper (Rob Bennett, EcoDistricts) • Portland Sustainability Institute publications (such as individual pilot progress reports and pilot program evaluation report) • EcoDistricts Framework 1.0 document (Program Officer from PoSI) • "EcoDistricts Performance Areas Toolkit" (Portland Sustainability Institute) • Feasibility studies by various consultants	• Academic papers published in scientific journals • Master's theses and other student reports • Third party websites, such as Museum of the City

Table 4.5: Summary of sources consulted in the BREEAM-Communities case study. Source: author.

Primary documents	Secondary documents
• Swedish national websites • City of Malmö website • BREEAM-C 1.0 bespoke manual • Private planning team documents (visual communication documents and Excel file) • Diligentia PowerPoint presentations	• Academic papers published in scientific journals • Published case studies • Two Master's theses

Table 4.6: Summary of sources consulted in the Superblock case study. Source: author.

Primary documents	Secondary documents
• Summaries of the workshops in Sant Martí by Barcelona City Council • Diagnostic Report for superblocks in San Marti, published by Barcelona City Council and UAEB: "Superblock pilot project area: San Mart District" • Debate summaries published by Barcelona City Council • "Let's fill the streets with life: Establishing superblocks in Barcelona," report by Commission for Ecology, Urban Planning, and Mobility (Barcelona City Council) • "A new model of mobility and public space in Barcelona, based on superblocks" (Urban Ecology Agency of Barcelona) • Presentations, plans, and other official documents from the UAEB made available by special request • Videos of student projects from the pilot project simulation • Official documentation (pamphlets, brochures, press releases, programs, etc) from the superblock simulation and Horizontal Studio • Ecological Urbanism handbook (Urban Ecology Agency of Barcelona)	• News articles concerning the superblocks pilot project in various Spanish and international newspapers • Articles published in scholarly journals

Semi-structured interviews

Interviews can be described as "a conversation with a purpose." (Kahn & Cannell, 1957) Open-ended interviews, or otherwise known as semi-structured interviews, made up the bulk of the data collected. Marshall & Rossman explain that qualitative in-depth interviews help uncover a participant's views but generally respect how the participant frames or structures his / her response. In this way, the participants' responses should unfold in the way that he / she sees and frames the issues being discussed, and not in the way that the researcher does (ibid). The first step in the interviewing process was to select the right people to interview in each of the case studies – referred to commonly in the literature as "sampling." As Creswell and Clark (2017) explain, "*purposeful sampling* means that researchers intentionally select participants who have experience with the central phenomenon or the key concept being explored." In the case of this research project, it was relatively easy to select the right participants to interview, since the goal was to interview all members of the design team involved in implementing the neighbourhood sustainability frameworks. Initially contact was made approximately one month prior to the fieldwork trips in order to gather the names of the people involved, and these people were contacted to a request an interview a few weeks before the fieldwork was to take place.

Tables 4.7, 4.8, and 4.9 summarize the people interviewed in each case study. A total of 20 interviews were conducted with the core members of the teams involved with the pilot projects, as well as 2 informational interviews in the EcoDistricts case with two architects who were very familiar with EcoDistricts but were not involved directly in the pilot project. In addition to these 20 interviews, 7 other informational interviews were done in Portland and in Europe to provide supplementary insight on the case studies, but are not included in the tables below.

Table 4.7: People interviewed in the EcoDistricts pilot project in Portland, USA. Source: authors.

EcoDistricts pilot projects in Portland, Oregon
Executive Director, South Waterfront Community Relations
Architect, Green Building, BUP, City of Portland
Executive Director, Lloyd EcoDistrict
Senior Project Manager, Portland Development Commission
Director of Certification & Innovation, Portland Sustainability Institute (now EcoDistricts)
Executive Director, Oregon Solutions
Executive Director, Go Lloyd (formerly Lloyd Transportation Management Association)
Informational interview: architect, SERA architects
Informational interview: architect, ZGF architects

Table 4.8: People interviewed in the BREEAM-C Masthusen pilot project. Source: Author.

BREEAM-Communities Masthusen pilot project in Malmö, Sweden
Sustainability coordinator, WSP group
Project manager / internal sustainability consultant, Diligentia
BREEAM-C assessor, White Architects
Urban planner, Malmö municipality
BREEAM-Communities Manager, BRE Global

Table 4.9: People interviewed in the Ecological Urbanism – Superblocks pilot project. Source: authors.

Ecological Urbanism Superblocks pilot project in Barcelona, Spain
Director, Urban Ecology Agency of Barcelona
Sociologist and Project Manager, Urban Ecology Agency of Barcelona
President, Neighbourhood Association of San Martí
Member, Neighbourhood Association of San Martí
Architect, City Council, City of Barcelona
District Manager, San Martí district in Barcelona
Professor, Universitat Internacional de Catalunya (UIC)
Student, Universitat Internacional de Catalunya (UIC)

Participants were interviewed with the purpose of understanding their experiences using the neighbourhood sustainability frameworks. As Merriam (2009, p. 88) states, “interviewing is necessary when we cannot observe behavior, feelings, or how people interpret the world around

them." The type of interview was "retrospective." This type of research examines retrospective and historical accounts of the design process as provided in design participants retrospective descriptions of communication activities and histories of the design process. In this way, these studies analyze communication using participants' reconstruction of their realities (Sonnenwald, 1996).

Being able to locate and pin down participants for interviews had its ups and downs. For the most part, efforts were successful. However, in certain instances, participants made excuses not to participate in the interview process. For example, the CEO of EcoDistricts, former director of innovation at EcoDistricts, and former program manager for EcoDistricts all either never responded or declined to be interviewed. Thankfully the EcoDistricts Program Director agreed for an interview. In Malmö, many of the key actors had moved on to new jobs and it was difficult to track them down. However, in the end, all the key team members agreed to interviews by Skype if they were not available to meet in person. In Spain, all key actors agreed to interviews. The most difficult part in the interviewee process, however, was accessing members of local communities. In all three pilot projects, there was a community participation program or component. However, in each case, the program managers or people responsible for this process felt that they could not release the names of the participants in order to be contacted for an interview. Finally, in Barcelona, the architect of the City of Barcelona passed on the contacts of the president and another member of the Sant Martí Neighbourhood Association, which was very active in the charrettes that were held.

During the interviews, a list of key topics were brought up, sometimes in different orders, depending on the flow of conversation. Creswell explains that qualitative research interviews should be "unstructured and generally open-ended questions that are few in number and intended to elicit views and opinions from the participants." (Creswell, 2013, p. 188) This was the strategy used during the fieldwork. Follow-up questions were often specific to the direction that a particular conversation was going. Some example of the interview questions include:

- Can you explain your background and your involvement in the pilot project?
- Can you tell me about the process of using the framework?
- Can you tell me how the framework works?

- Who were the other actors involved and what were their roles?
    - Follow-up question examples: How did you feel about so-and-so's involvement?
- What was the most exciting part for you about using the framework?
- What was the most frustrating part?
- What were the biggest challenges in using the framework?
- What possibilities did it open up?
- What tensions arose?
- What kind of feedback did you get about using the framework?
- How was it different than the way you do things in other projects?
- Is there anything you would like to add?

It should be noted that the rhythm and way in which the questions were posed greatly improved over time, as the researcher gained more experience and confidence. The EcoDistricts was the first case study to be studied in a fieldwork trip during the fall of 2015, and during this case study, the questions were much more scripted. However, over time, the researcher grew more comfortable and able to remember the key points and follow the flow of the conversation, asking the interviewee to expand or clarify when necessary.

All interviews were recorded (usually using two devices) and transcribed by the researcher. The names are not revealed, and each person is referred to by their job title in each of the case studies. Interviewees were asked to sign a consent form as part of the ethics certificate from the Université de Montréal that the researcher obtained (CPER-14-125-D) and were told that they could withdraw from the study at any time during or after the interview. Once the interviews were transcribed, they were then coded using *content analysis.*

4.5 Obstacles and limitations in the research

As with every research project, this dissertation was confronted with several challenges and limitations. These limitations mostly have to with accessibility to certain types of information and challenges in reaching certain stakeholders in the interview process.

A first key limitation was language; two of the three case studies are in foreign countries where many primary and secondary source documents were in Spanish, Catalan and Swedish. In the Malmö case, there are many documents and academic papers published only in Swedish, and the researcher did not have the budget to hire a translator for all these documents. The documents analysis for the Malmö case is thus considerably limited based on this language restriction. Thankfully, there are several secondary sources that are published in English; and the bespoke manual itself was published in English. Similarly, in Barcelona, many of the documents are published in Catalan, if not Spanish. For example, the summary documents of the participatory workshops held for the superblocks pilot projects were all published in Catalan. The researcher is fully fluent in Spanish and can understand some basic Catalan, but reading any Catalan documents proved very tedious and time-consuming, as many words had to be translated.

A second limitation was accessing the community in those case studies where community participation was an important theme that surfaced. In the Malmö case and in the Barcelona case, project contacts from the planning team in Masthusen and the Urban Ecology Agency of Barcelona did not feel comfortable providing the researcher with the names and/or contact information of local community members who had participated in workshops and focus groups. In the Malmö case, the planning team did not even provide the information for the anthropologist who was hired to run the community workshops, as they said it was too long ago and they did not know if they could easily find her contact information. At least in the Barcelona case, the author was able to access summary documents of the community workshops, which were published on the City's website. In the Barcelona case, because that case study is so fraught with political tensions, it sometimes seemed like the researcher was guided towards only speaking to certain people and not others.

A third limitation of the research was non-response from a few key stakeholders in the case studies. This mainly occurred in the EcoDistricts case study, when the Director of Innovation, the CEO and a Program Manager from EcoDistricts (or PoSI at the time of the 2010-2013 pilots) either did not respond or refused an interview. Even after several emails were sent, it was impossible to reach these key players. A Master's in Urban Planning student from Portland who

did her thesis on Portland's EcoDistricts also mentioned non-response from the Director, CEO and Program Manager. While it is difficult to say why this is the case, two possible explanations are that the organization is now focused on its national program and does not want to "waste time" on the original pilot projects. Another possible explanation is an aversion to discussing any failures or weaknesses in the process. Although the researcher was unable to interview the Director or CEO, she was able to eventually interview the former Program Director of PoSI, someone who had been very involved in the two EcoDistrict pilot projects and whom the other stakeholders had mentioned in their interviews. The researcher had had trouble reaching this Program Director, as she had moved on to a new job. While the researcher was unable to get some of the high-level and background information about PoSI and the five EcoDistrict pilots from the Director of Innovation or CEO, she was able to get much more specific information about how the pilot project process was run (right down to the specifics of how meetings were run and who was present), how PoSI saw its role in the process, and how it saw others' roles. In the end, this information was much more relevant to the research questions.

A fourth limitation of the research project was access to non-biased information about the case studies. The primary source documents from the three case studies are all published by organizations that have a vested interest in the success and strong reputations of the projects. Aside from planning documents and project evaluation reports, the author was not able to access many internal private documents like meeting minutes or notes taken during community workshops, email correspondence, and so forth. In the cases of the BREAAM-Communities pilot project and the Ecological Urbanism-Superblocks pilot project, design team members shared documents that were not available online. However, in the case of the EcoDistricts pilot projects, the persons interviewed were less responsive to requests for documents such as meeting minutes, and so forth. The researcher therefore relied first and foremost on semi-structured interviews and secondly on other documents to construct the case studies.

A fifth limitation was interviewees' memory of events three to five years after the pilot project process (in the case of EcoDistricts and Masthusen). Interviewees sometimes did not remember specifics about how often the planning team would meet or how the eco-district framework was applied in a certain phase. In these cases, the interviewees would often revert to

two tactics: speaking in generalities or elaborating on a certain emotion or tension that they recalled strongly, or steering the conversation towards something they felt more strongly about.

A sixth limitation of this research project is the researcher's own background and knowledge level of certain subjects. The researcher has a professional Master's in Architecture and a B.A. in International Relations and has worked professionally in architecture and community planning. New fields of knowledge had to be incorporated into this thesis – as was brought up by interviewees in semi-structured interviews – where the researcher had no prior experience. For example, the researcher had no previous exposure to stakeholder management and theory and so made an appointment with a Université de Montréal professor who teaches a course on stakeholder management in urban projects who could help point the researcher in the right direction. Visual communication is also a foreign field to the researcher. In summary, the researcher had to go outside her comfort zone to consult new bodies of literature to construct the theoretical framework.

A seventh limitation is, as with all qualitative research projects, that the research relies heavily on interviews and the researcher's interpretation of these interviews and of other documents. It is therefore, to a certain degree, subjective. These results can therefore not be considered generalizable and applicable to all eco-districts. Instead of emphasizing generalizability as a criterion for judging qualitative research, Dixon-Woods et al. (2004) suggest judging qualitative research based on methodology and Lincoln et al. (2011) on the rigor of interpreting results.

4.6 Coding in nVivo: data analysis procedures

After all the interviews were completed, they were transcribed by the researcher over a number of weeks. Each interviewee was assigned a code name to protect his/her privacy. Next, the interviews were uploaded into a qualitative analysis software called NVivo, which helps to code interviews using key words or phrases and analyze and sort the data according to frequency (it thus helps in content analysis). Coding can be defined as "the process of organizing material into "chunks" before bringing meaning to those "chunks."" (Rallis & Rossman, 1998) It is "the analytical processes through which data are fractured, conceptualized, and integrated to form

theory." (Strauss & Corbin, 1998) It involves categorizing the data that has been collected and labelling those categories with a term (a term often based on the language used by participant / interviewee). Different types of codes can be attributed by the researcher, such as contextual codes, perspectives held by participants, activity codes, and so forth (Bogdan & Biklen, 1992).

Table 4.10: Main coding topics covered in interviews. Source: author.

Main topics covered in interview		**Type of code**
Tensions in the process:	Tensions, generally Bottom-up vs. top-down Process vs. product Short-term vs. long-term ….	[result]
Collaboration	Collaboration, generally Collaborative partnerships	[process theme]
Stakeholders	Stakeholders, generally Stakeholder roles Stakeholder interests	[process theme]
Communication	Visual communication Shared language	[process theme]
Participation	Community participation	[process theme]
Leadership	Leadership, generally Green champion	[process theme]
Problem-solving	Problem-solving Problem-setting (framing)	[process theme]
Benefits of process	[varies greatly]	[result]
Memorable quotes	[varies greatly]	[other]
Background information	[varies greatly]	[context]

The first step in the data analysis was to print all of the interviews and to do a general read-through all in one go (or at least, each case study in one go). From this read through, the author was able to pick up on some key themes. As interviewees did not always use the same terminology to express the same idea, it was easier to identify the key themes manually than by using the keyword search function in the qualitative analysis software. For example, in discussing collaboration, there were many different expressions used by interviewees, such as "working together," "having regular meetings," "teamwork," and so forth. While this may seem a more inefficient way of working (not to mention a limitation of the software!), it allows the researcher

to go to the essence of what the interviewee is saying and reflect on any nuances. Next, several common themes were identified (along with sub-themes) and coded using the NVivo software, which are identified in Table 4.10. These themes can be divided into four super-categories: 1) background/context information; 2) process elements, or those themes that contribute to the process-based approach; 3) results (either benefits or negative consequences in terms of conflicts and tensions); and 4) other (mainly memorable quotes). Frequency analysis and percentage coverage was then run using the NVivo software to determine the most prominent process themes discussed by participants. Although this varied slightly from case to case, some prominent themes were common between cases. Collectively, the most frequently discussed themes are summarized in Table 4.11.

Table 4.11: Most frequently-discussed themes amongst participants. Source: author.

	BREEAM-C (Malmö)	Eco-Districts (Portland)	Eco-Urbanism (Barcelona)	**Total:**
1. *Stakeholder roles & interests*	5	45	45	**95**
2. *Collaboration*	18	32	39	**89**
3. *Community participation*	11	2	37	**50**
4. *Communication*	7*	1	17	**25**
5. *Leadership*	5**	12	0	

* 9% and 10% coverage in two of the interviews.
* 1%, 0.06% and 0.06% in three interviews.

Table 4.12: Theme results by case study – selection for case study analysis. Source: author.

Themes brought up by interviewees		
EcoDistricts pilots (Portland, OR)	**BREEAM-Communities pilot (Malmö, Sweden)**	**Superblock pilot (Barcelona, Spain)**
1. Stakeholder relations 45 results in nVivo	**1. Collaboration** 18 results in nVivo	**1. Stakeholder relations** 45 results in nVivo
2. Collaboration 32 results in nVivo	**2. Community participation** 11 results in nVivo	**2. Community participation** 37 results in nVivo
	3. Visual communication 7 results in nVivo	

Coding and processing the interviews was not necessarily a linear exercise. The researcher tended to code interviews from one case study all in one batch, but the key themes did not necessarily correspond between case studies. For example, when processing the EcoDistricts interviews, the theme of "stakeholder roles" had not yet been uncovered as a key theme. It was not until reading and processing the BREEAM-C interviews that this theme emerged as quite important. As a result, the researcher had to go back and re-read, re-code the EcoDistricts interviews to search for responses corresponding to "stakeholder roles." This experience corresponds to what Marshall & Rossman say about data analysis: "It does not proceed in a linear fashion; it is not neat." (p. 150) Universal variables could have been developed and analysed across the board in each of the case studies. However, the researcher made a conscious choice to explore the fullest potential of each case study based on what interviewees highlighted in interviews and did not limit the study to just those factors that were universal. Note also that Table 4.12 shows no universal theme across all three cases.

Accordingly, these themes were developed and used as a lens through which to filter and interpret the data (and helped form the conceptual framework presented in **Chapter 3**). In other words, these themes were uncovered as different dimensions of a process-based approach that can be cracked open to provide certain insights. Filtering the interviews by these dimensions happened before the final step of *interpreting* or *analyzing* the data. After generating themes or patterns and coding the data, the next step is to test emergent understandings and search for alternative explanations, according to Marshall & Rossman. Lincoln & Guba explain, "A final step in data analysis involves making an *interpretation* or meaning of the data. "What were the lessons learned" captures the essences of this idea." (p. 194) In other words, what are the takeaways from the interviews? What insight do they shed on the research topic, and how do they help construct an answer to the research questions? How do they fit in with the literature from the field? According to Creswell (1994), these takeaways can mean different things. They can mean takeaways about participants' understandings; they can provide valuable insight by comparing interviews with findings in the literature and theory, and they can also suggest new questions that need to be asked.

In the case of this research project, interviews highlighted important new findings with respect to an emergent research area on neighbourhood sustainability frameworks and in particular, the different dimensions of stakeholder roles, collaboration, community participation, and visual communication, which help contribute to building the process-based approach. Moreover, interviews also provided valuable insight about tensions that surfaced in the process of applying these frameworks in the pilot projects and the various internal and external factors which either inhibited or enabled the design process. Figure 4.7 sketches out the analytical framework for analyzing and interpreting the data, where internal and external factors to the design process either inhibit or enable the design process (seen through the lenses of the 4 dimensions). This analytical framework complements the conceptual framework presented at the end of chapter 3. After the individual case study analyses (chapters 5-7), **Chapter 8: Shifting the Paradigm** will integrate the results from the three case studies and construct the resulting theoretical framework.

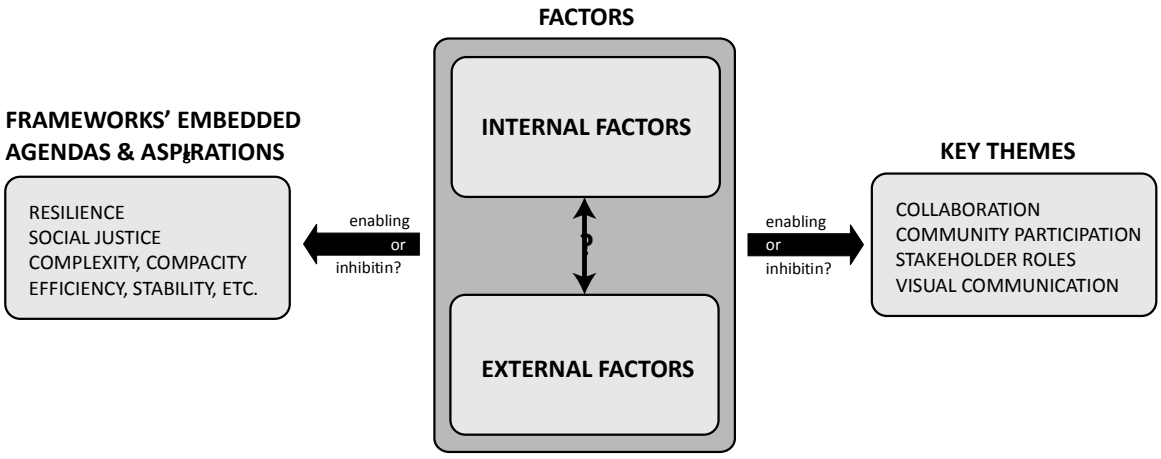


Figure 4.7: Analytical framework for the case studies, which complements the conceptual framework in chapter 3. Source: author. This figure shows how in the centre, internal and external factors may have a relationship to one another. These factors also influence agendas and aspirations on the one hand, and the key themes of the dissertation on the other. They can either inhibit or enable these agendas/aspirations and key themes.

4.7 Strategies for validating the findings

A key step in the case study methodology is validating the research findings and conveying the steps taken to check for the accuracy and validity of findings. Often, some key questions asked to validate research questions include: How credible are the findings? How transferable are the findings to another case? How replicable are the findings if the study was to be repeated?

How certain is it that the findings come from participants' views and not the researchers' biases or prejudices (Marshall & Rossman)? These questions can sometimes be trickier to answer in qualitative research, compared to either quantitative research or mixed methods research. In some types of multiple-case analysis for instance, it is possible to produce generalizations (Yin, 1999), and so *generalizability* is one criteria for valid research. However, as Creswell notes (1999), generalizability may play more of a limited role in qualitative research. Lincoln and Guba (1985) propose criteria for validating qualitative research: credibility (accurate identification and description of the phenomenon); transferability (usefulness of the findings to others in similar situations); dependability (accounting for possible changing conditions in the phenomenon being studies); and confirmability (objectivity of the study). However, in qualitative research, the researcher usually acknowledges how his or her natural subjectivity will inevitably shape the research. Moreover, in order to address the challenges associated with validating qualitative research findings, Creswell and Miller (2000) suggests the following:

- Triangulating research findings with several sources
- Using "member-checking," where participants review the material and check for its accuracy
- Using thick descriptions
- Clarifying any biases that the researcher may have from the outset

Whereas triangulation is a common strategy for validating research findings in a mixed methods approach, it is not always as evident in purely qualitative studies. Triangulation design is when researchers collect different types of complementary data on the same topic in order to validate the findings or to fill in the gaps. In certain instances, the documents analysis will help validate the findings in the three case studies (for instance in the pilot evaluations done by EcoDistricts or in the community workshop summaries in the Superblock case study); however, in general, the documents analysis will serve primarily for background information or to fill in the blanks. As this research relies very heavily on qualitative interviews with members of the design teams in the three case studies, a weakness is the lack of ability to fully triangulate the data.

Lincoln & Guba's four criteria and Creswell's suggestions for validating qualitative research are used in the case studies in order to ensure the highest degree of quality of the

research possible. For example, the interviews were complemented with primary and source documents to triangulate data whenever possible; sections of the case study chapters were also sent to so some interviewees for "member-checking." Finally, the researcher's background any biases were described at the beginning of this chapter.

4.8 How ethical issues were approached in the research

Ethical approval and ethical conduct is a very important step in a research project. An application was submitted to the Université de Montréal's ethics committee, called the *Comité plurifacultaire d'éthique de la recherché* (CPER), before a short research trip to Barcelona in November of 2015 and was awarded in time for the trip.[13] Unlike research projects using vulnerable populations or children, or dealing with sensitive issues such as violence or trauma, this research project was relatively straightforward and no issues were encountered in the ethics certificate application process or on the field. In the application to CPER, the researcher included an invitation letter template for interviewees to participate in an interview, a template for a consent form, an application form, and a 10-page research description. Some sample interview questions were also included in the application process. The CPER also required the researcher to inquire about getting ethics certificates in the places where the fieldwork would occur; however, after contacting several local institutions and Internal Review Boards in the cities where the pilot project case studies took place, no institution was able to grant an ethics certificate for the project. The CPER thus approved the application and waived the requirement for the certificates abroad.

When it came time for the interviews during the fieldwork stage, the researcher contacted interviewees approximately one month in advance to invite them for an interview and attached the consent form to this email for reference. On the spot, interviewees were asked to sign the consent forms and were told that they could withdraw from the study at any moment. While some participants said it was okay to use their names in the research, the researcher ultimately decided to keep their identities anonymous and instead, refer to them with a generic

[13] See CPER ethics certificate number CPER-14-125-D

title, such as “an architect from the Barcelona City Council,” or “a BREEAM-Communities manager.” Moreover, in a few instances where the researcher felt that the interview responses could be perceived as controversial, she decided to refer to these participants even more generally, for example, by saying “One interviewee from the BREEAM-Communities pilot project stated…” in order to avoid any ethical conflicts or issues.

CHAPTER 5

EcoDistricts pilot projects, Portland, Oregon

This chapter presents a comparative case study analysis of two ecodistrict pilot projects in Portland, Oregon. In 2010, the City of partnered with the Portland Sustainability Institute (Program Officer from PoSI) to develop a pilot version of an EcoDistricts Framework and to test it out in five different pilot projects. The research focuses on the two dense, urban pilot projects: the Lloyd EcoDistrict (a business district in East Portland in the midst of transforming into a mixed-use sustainable community), and the South Waterfront EcoDistrict (a brownfield site along the Willamette River, close to downtown). While the Lloyd EcoDistrict is considered a success, the South Waterfront EcoDistrict disbanded in 2013. This chapter therefore examines the internal and external factors that contributed to success or failure through the lenses of stakeholder relations and collaboration.

Chapter 5: EcoDistricts pilot projects, Portland, Oregon

5.0. Overview of this chapter

This chapter presents a comparative case study analysis of two eco-district pilot projects in Portland, Oregon. In 2010, the City of Portland (via the Mayor's office, the Bureau of Planning & Sustainability, and the Portland Development Commission) partnered with the Portland Sustainability Institute (PoSI) to develop a pilot version of an EcoDistricts Framework and to test it out in five different pilot projects. Accordingly, they chose five sites for the pilot projects, all of which were "urban renewal areas." The research focuses on the two dense, urban pilot projects: the Lloyd EcoDistrict (a business district in East Portland in the midst of transforming into a mixed-use sustainable community), and the South Waterfront EcoDistrict (a brownfield site along the Willamette River, close to downtown). Interestingly, the Lloyd EcoDistrict is recognized as the only successful ecodistrict model of the five pilot projects, and the South Waterfront ecodistrict disbanded in 2013 and thus is considered somewhat of a failure. What impact did the EcoDistricts Framework have on the planning process and on practice (the main research question)? And why did one pilot project succeed while the other one failed? What external and internal factors contributed to the pilot projects' success/failure?

In order to answer these questions, this chapter presents the findings of in-depth interviews with seven key stakeholders involved in the Lloyd and South Waterfront EcoDistricts (please refer to Table 4.9.) interviewed in December 2015, and which are bolstered by primary and secondary source documents. The chapter begins with a description of the background and historical context leading up to the EcoDistricts pilot projects in Portland in 2010-2013. According to interviews with the seven key stakeholders, the EcoDistricts Framework most impacted the design process in terms of stakeholder relations and collaboration (which generated 45 and 26 results in the nVivo qualitative analysis software, respectively). A second layer of analysis in the chapter is of course the factors that contributed to the success and failure of these pilot projects. For instance, contextual elements such as a scandal involving the former mayor Sam Adams, the tanking of the U.S. economy, and a change in leadership were external inhibiting factors that set

the stage for much ambiguity regarding the different stakeholder roles and responsibilities. At the same time, certain attributes that the design teams possessed or lacked also strongly affected outcomes and their ability to overcome obstacles in the planning process. This chapter therefore discusses the interplay between these contributing factors and the themes of stakeholder relations and collaboration, which will help eventually in constructing the process-based approach in the final chapter.

To support the analysis of data according to the themes above, this chapter draws on certain elements from existing models in the project management literature that focus on stakeholder management and on collaborative planning (especially Innes & Booher's *collaborative rationality* model). Valuable lessons are gleaned from the case study, which result in important new contributions to the literature on ecodistricts and sustainable urban planning. As a result, current collaborative planning models are expanded upon and presented in the final section of this chapter. This case study represents an important contribution, because it suggests that even if the ingredients for a process to be collaborative (or collaboratively rational) are present, the process can still fail. Thus, it is important to understand first the obstacles to the pilot project, and also the internal contributing factors or attributes that can allow the planning team to overcome these obstacles and maintain momentum over time. In other words, how can planning teams be more resilient to external and internal inhibiting factors?

5.1. The EcoDistricts Framework and its embedded agendas and aspirations

Sustainability frameworks, whether at the building or neighbourhood scale, usually have agendas and philosophies embedded within them. Sometimes these agendas and philosophies are more explicit, and sometimes they are more implicit. As the EcoDistricts Framework was developed in Portland, it was designed to respond to certain policy agendas that were prevalent in Portland at that time, for instance issues of social equity (income, education and health equity issues), ecological degradation, rapid urban growth, and the growing threat of climate change. The EcoDistricts Framework frames the problem largely in terms of an equity gap. PoSI described the initiative quite loosely as "a new model of public-private partnership that emphasizes

innovation and deployment of district-scale best practices to create the neighbourhoods of the future – resilient, vibrant, resource efficient and just."[14] (EcoDistricts, 2014) EcoDistricts CEO Rob Bennett adds that the EcoDistricts Initiative "combines best practices in smart growth and urban design, community participation and institutional alignment, modeling and visualization tools, rating and evaluation systems, zoning and building codes, financial models for infrastructure and building retrofits, and green building and infrastructure technologies and practices." (Bennett, 2009, p. 1) Thus its aims are quite broad. What is apparent through the EcoDistricts website and other primary source materials is that the social equity, democracy, and inclusivity components come through very strongly. At once, EcoDistricts aim at creating opportunities for all Portland residents, regardless of their socio-economic backgrounds, and as well, the processes for implementing neighbourhood-scale sustainability initiatives need to be democratic and inclusive in order to "co-create innovative district-scale projects." (EcoDistricts, 2018) In this way, it makes the social justice agenda part of the sustainable development agenda, agendas that are often treated as separate discussions (S. D. Campbell, 2013). Clearly, the structure of the framework as primarily a collaborative governance framework responds to these aims. At least in theory.

Equity and democracy also appear in the performance areas within the framework. The EcoDistrict Framework provides for "Healthy, equitable, and viable communities with active and diverse participation" as one of the performance areas, hinting at how community empowerment can create a more just process. At the same time, community empowerment can also enhance resilience to future disruptions. Other performance areas include net zero carbon, net zero energy, promoting active forms of transportation, responsible use of water, and healthy ecosystems. While the most recent version of the Protocol has evolved to incorporate more regenerative and net positive aims, the original framework tested in the pilot projects was more focused on district-scale optimization of infrastructure, smart-growth principles, and social equity issues.

[14] The EcoDistricts Framework later evolved to become the EcoDistricts Protocol, which now has three imperatives: Equity, Resilience, and Climate Protection. Comparably to other neighbourhood sustainability frameworks, the new Protocol 1.0 places much more emphasis on equity issues, such as access to opportunities, access to affordable housing, engagement and inclusion, access to affordable healthcare and healthy food, and so forth (EcoDistricts, 2016).

5.1.1 The EcoDistricts Framework 1.0.

As described in **Chapter 2: Literature Review**, the EcoDistricts Framework can be considered a second-generation eco-district framework. It took a different approach from other neighborhood scale sustainability tools such as LEED for Neighborhood Development or CASBEE Urban Development, by focusing on the processes, actors, and local actions for sustainability. Rob Bennett, CEO of EcoDistricts (formerly PoSI), described the framework as "loose-fitting", and stated that "EcoDistricts isn't a place – it's a movement" towards collaborative governance (in Schuler, 2013). It is thus a "a collaboratively built process management tool." (EcoDistricts, 2015, p. 8)

PoSI's vision of an ecodistrict was a district that is committed to the implementation and growth of sustainability; one that implements strategies such as energy management systems, green streets, bioswales, etc.; one that might include district-scale energy generation; a district that combines buildings, infrastructure and people; and a model for livable communities (National Research Council, 2014). Tim Smith from SERA Architects, who was involved in building the EcoDistrict concept in the early days, describes an eco-district as "a geographically defined neighborhood where the community members, buildings, and common infrastructure are fully integrated and are established to support a network of sustainable social, ecological, and economic systems." (National Research Council, 2014) Finally, an eco-district encompasses many different stakeholders from the public and private sectors; but it is also supposed to be a community-led initiative that embodies a just process. In this way, it requires community governance to build and define priorities, identify partnerships and establish municipal policy to support eco-district development.

According to the "EcoDistrict Protocol Stakeholder Engagement Report," developing the EcoDistrict Framework took approximately two years from 2010-2012 and was developed using a triangulation approach: practitioner-based committees to develop and support the creation of the protocol, strategic advisors to work through key milestones and technical challenges, and pilot projects to test and refine the protocol. In 2010, a Technical Advisory Committee (TAC) was established to develop a preliminary version of the framework. Eventually, this framework was further refined through testing in 35 other U.S. cities and then went through an extensive review

process, with a Global Advisory Committee. The early version of the EcoDistricts Framework (the one tested and refined in Portland's five official pilot projects) included an implementation framework, implementation toolkit, and training tools. While it can be broadly characterized as a holistic and collaborative governance framework aimed at district sustainability, it also includes performance and assessment criteria used in two phases. In this sense, it is a framework that somewhat blurs *process* and *performance,* as discussed in chapter 2 of this dissertation. The EcoDistrict Framework pilot version involved four stages:

1. **District Formation:** In this phase, EcoDistricts stakeholders are organized to create a shared vision and governance structure and relies on community engagement and citizen participation for success. It also includes the creation of a neighbouring governing entity to manage district sustainability, usually in the form of an EcoDistrict steering committee (PoSI, 2013).
2. **District Assessment:** In this phase, the district is assessed using key performance criteria in order to determine strategies of greatest impact and to prioritize the most appropriate projects (ibid).
3. **Project feasibility and development:** Drawing from the sustainability assessments, this phase aims at determining the most effective and appropriate project implementation strategies for that specific context.
4. **District monitoring:** During this phase, a project is monitored to understand the full range of social, economic, and environmental impacts. This can be done using the EcoDistricts performance standards as well as qualitative documentation and lessons learned about implementation (ibid). Performance areas include: equitable development, health & well-being, community identity, access & mobility, energy, water, habitat & ecosystem function, and materials management.

The framework also includes four main toolkits used to help in the implementation process. The pilot project analysis in this case study focuses mainly on the earlier phases and does not go into detail on the district monitoring phase. It is important to note though, that PoSI maintained the sole control over testing the framework. Interviewees other than from PoSI actually spoke very little about the framework itself and more about the process in general, suggesting that they

were perhaps unaware of the precise Framework steps and were more passive participants in the Framework's testing. This differs substantially, for example, from the next chapter on the BREEAM-Communities pilot project in Malmö, Sweden, where the planning team had access to the BREEAM-Communities guidebook and so were much more able to comment on its application in the planning process.

Since each eco-district project is unique, the EcoDistricts Framework was designed to be sufficiently flexible with a number of toolkits that could cater to and guide the goals and actions of a given eco-district project. This is because PoSI believed that each eco-district should build on its own unique strengths and opportunities, and build a plan based on these unique characteristics (Waddick, 2014). In this sense, a positive outcome is as much about neighbourhood identity and collaborative decision-making than it is about performance or prescribed built features. But let's now take a brief look at the history of the Ecodistricts initiative and the urban planning context in Portland.

5.2. Background context: Portland's long history of sustainable planning and collaborative governance

Portland has a long history of innovation in sustainable urban planning that is built on cross-jurisdictional coordination (Joss, 2015), innovative sustainability policies and plans, and very active neighbourhood associations. Portland began developing a vision for an ecologically-friendly city in the 1970s. Bills 100 and 101 were passed in 1972 and 1973 respectively, which mandated cities to define and periodically update their 'urban growth boundary,' a land use planning tool to control the expansion of the city proper onto forest and agricultural land (Oregon Metro, 2016). Also in the 1970s, some 25 or so towns and cities joined up to form a joint regional government entity known now as Metro. Metro's primary responsibility was to implement framework policies in support of designing, maintaining, and updating the urban growth boundary.

Portland's planning approach at the local policy-making and decision-making level has been defined for some time now by its strength in coordination and integration across neighbourhood, municipal, and regional levels, and across policy issues (Joss, 2015). It has also

pursued an active urban sustainability policy agenda through its various plans over the past few decades:

- For instance, the 1972 Downtown Plan attempted to deal with both socio-economic decline and environmental pollution issues.
- Approximately ten years later, the 1980 city-wide Portland Comprehensive Plan focused on pedestrianizing downtown inner-city neighbourhoods, developing better public transit (including a light rail system), developing mixed-use projects, and adding more social housing (City of Portland, 2016a; Joss, 2015).
- In 1993, Portland became the first American city to create a local action plan for cutting carbon emissions, leading to the Portland/ Multnomah Local Action Plan on Global Warming in 2001.
- In 2000, Portland formed the Office of Sustainable Development, which then merged with the city's planning department in 2008 to form the Portland Bureau of Planning and Sustainability, known as BPS.
- In 2009, Portland's Climate Action Plan was created to help Portland and Multnomah County cut carbon emissions by 40% by 2030 and by 80% by 2050 compared to 1990 levels (City of Portland, 2016b).
- In 2012, and after a long public consultation process and hundreds of workshops, the City adopted the 2012 Portland Plan under a City Council resolution, which included a 25-year equity framework based on that promote a prosperous, educated, healthy and equitable society (Joss, 2015; Portland City Council, 2012).
- Finally, building on the 2012 Portland Plan and the Climate Action Plan, Portland introduced the 2035 Comprehensive Plan in June 2016, which is a long-range land use and public facility investment plan to guide future growth and the physical development of the City (City of Portland, 2018). Policy 4.71 in the 2035 Comprehensive Plan integrates ecodistricts into the Plan and involves "[e]ncourag[ing] ecodistricts, where multiple partners work together to achieve sustainability and resource efficiency goals at a district scale." (City of Portland, 2018)

It is also important in describing Portland's planning context to explain the long, rich history of citizen and neighbourhood association involvement in affecting urban development and urban sustainability. Portland's neighbourhood associations have been active in affecting various land use and urban policy decisions by facilitating public participation, and at times, opposing major developments. In the 1970s, the Portland Office of Neighbourhood Involvement (ONI) was set up, giving neighbourhood associations a formal status. This program was set up to help implement various neighbourhood-scale initiatives and involvement programs (Joss, 2015) and to act as a link between the different neighbourhood associations and the city government. Currently, 94 neighbourhood associations cover 100% of the land area, so these associations scale up to the scale of the entire city (Seltzer et al., 2010a).

5.2.1. The history behind EcoDistricts

The EcoDistricts initiative began in 2009 when the former mayor of Portland, Sam Adams, along with other sustainability leaders, such as Rob Bennett, now CEO of EcoDistricts, took a trip to Sweden to look at exemplary brownfield and greenfield redevelopment projects (Waddick, 2014). Upon returning to Portland, Sam Adams and Rob Bennett started the EcoDistricts movement, housed under the Portland Sustainability Institute (PoSI), based on the premises that urban sustainability could be achieved in large part through district-scale initiatives and through public-private partnerships. PoSI was set up as an independent non-profit organization financed by a seed fund created by Mayor Adams to drive neighbourhood-scale urban sustainability initiatives in the city of Portland. It was thus set up as a "bridging organization" (Cash et al., 2006) - a unique partnership that bridges between industry experts, city officials, political leaders, community leaders, and residents. It also brought together the City of Portland, Portland Development Commission, Metro Portland, Oregon Built Environment & Sustainable Technologies Center (BEST), and rea estate, design and construction industries (Bennett, 2009).

Developing the EcoDistricts Initiative was one of PoSI's key mandates. The initiative involved developing an eco-district framework to be tested in these pilot projects that would have an overarching collaborative governance emphasis. The initiative was also conceived of to support some of the city-wide and regional policy frameworks and sustainability targets

described in the previous section. For instance, EcoDistricts supports and complements the Climate Action Plan, state-wide greenhouse gas emission reduction targets, and smaller initiatives. And in turn, in 2016, the local government developed a policy to encourage the development of EcoDistricts, although this policy was not yet in place during the pilot project process in 2010-2013.

The Portland Sustainability Institute (Program Officer from PoSI)

The Portland Sustainability Institute was the leader of the five pilot projects. In its beginnings, the conversation was focused on where the start these district-wide efforts, and PoSI decided together with the Portland Development Commission (PDC) on five pilot projects located within the PDC's designated Urban Renewal Areas (URAs) (Waddick, p. 12). Once the five pilot projects signed memoranda of understandings with PoSI and the City, PoSI's main responsibility was to offer technical and organizational support to the five districts as well as cultivate a persistent volunteer base, foster support, gather resources, and maintain strong connections with the City (Waddick, p. 13). In the beginning, PoSI was very involved in the pilot projects, and often getting its feet wet. As Waddick describes, "Naomi Cole, an EcoDistrict organizing leader, was in the districts, on the ground, facilitating good practice, and setting up much-needed volunteer bases." (Waddick, p. 13) Furthermore, "In the beginning of the organization's work, employees of EcoDistricts were on the ground, in the districts, working to set up a stable volunteer base, people to see the actions of each of the districts through." (ibid) PoSI also helped the districts develop their own individual roadmaps, which included baselines and goals for moving projects forward. Internally, PoSI also had several responsibilities, which Bennett says included:

- creating a framework and pilot implementation for Portland;
- developing toolkits and strategies and best practices for assessment,
- engagement and local governance;
- assessing the viability and benefits of pilot districts;
- identifying catalytic projects;
- modifying policy and regulatory processes to support implementation;
- developing outreach and training tools
- identifying commercialization opportunities; and
- convening City Bureaus, Metro Portland, and real estate leaders

Further roles and responsibilities outlined in the literature included creating large sustainability goals and tracking results from pilot projects to improve efficiency and outcomes (Juvera, p. 12), helping to clarify the roles and responsibilities of other stakeholders, helping develop work plans for each of the pilot projects, and so forth (PoSI, February 2012, p. 9).

5.3. The EcoDistrict Pilot Projects: Districts Formation and Districts Assessment

The Portland Sustainability Institute (PoSI) in collaboration with the Portland Development Commission selected five pilot projects to test and refine the EcoDistricts Protocol 1.0 in 2010 over a three-year period. These five pilot projects were to coincide with already defined Urban Renewal Areas (URAs), and the aim was to form partnerships between PoSI and local district stakeholders, who would work with their local communities (Joss, 2015). These five eco-districts are detailed in figure 5.1 below. Over a period of three years, the pilot project stakeholders agreed to set rigorous standards and implement projects, and in return, PoSI and its partners provided technical and financial resources. After speaking with a Program Officer from the Portland Sustainability Institute (now EcoDistricts), it was determined that the Lloyd and South Waterfront EcoDistricts were the most interesting pilot projects to focus on; Lloyd because it is often considered in Portland as the most successful pilot project and is the only remaining eco-district from the pilot phase, and South Waterfront because it had its own Community Relations Manager and a focus on new sustainable transportation infrastructure. The South Waterfront EcoDistrict is an example of an eco-district that had much potential, but that disbanded in 2013. Lloyd and South Waterfront are described briefly in the following paragraphs.

Figure 5.1: Portland's five EcoDistrict pilot projects, with Lloyd and South Waterfront in red. Source: author.

5.3.1. South Waterfront: a promising eco-district that did not live up to its potential

The South Waterfront EcoDistrict is located in a previously industrial area (a brownfield site) south of the Ross Island Bridge, which joins east and west Portland (see Figure 5.2). Portland's industry along the Willamette River had historically focused on lumber, trolley repair, aluminum and iron smelting, storage, chemical manufacturing, and metal fabrication (Museum of the City). Part of the South Waterfront site includes the former Zidell Shipyards, which had been used to build large ships, such as the Liberty ships used in the Second World War. In 2002, the City created the South Waterfront District Plan, which focused on creating a sustainable district in the North Macadam URA. As the South Waterfront area started to develop and certain stakeholders began to mobilize around sustainability issues, a neighbourhood association was formed: South Waterfront Community Relations (SWCR).

Unlike most neighbourhood associations, the SWCR gained non-profit status and therefore had funding and professional staff. It also acts as the neighbourhood's Transportation Management Association (TMA)[15]. Much of SWCR's early work focused on "scoping its mission" and creating a sense of place in this newly developing neighbourhood (ibid). As the South Waterfront neighbourhood was one of the PDC's targeted Urban Renewal Areas and it appeared to have strong leadership potential with the SWCR in place, it seemed a natural choice for PoSI and the PDC to be one of Portland's five eco-district pilot projects. According to PoSI, "South Waterfront was identified as a priority project since there was a new wave of investments being planned for the district's north area, and the ability to engage the new residents to advance "operational" sustainability activities." (EcoDistricts, 2015) Moreover, "SWCR seemed primed and ready to lead the pilot because of their governance structure, funding, staff capacity, and representation of many of the district's stakeholders." (ibid)

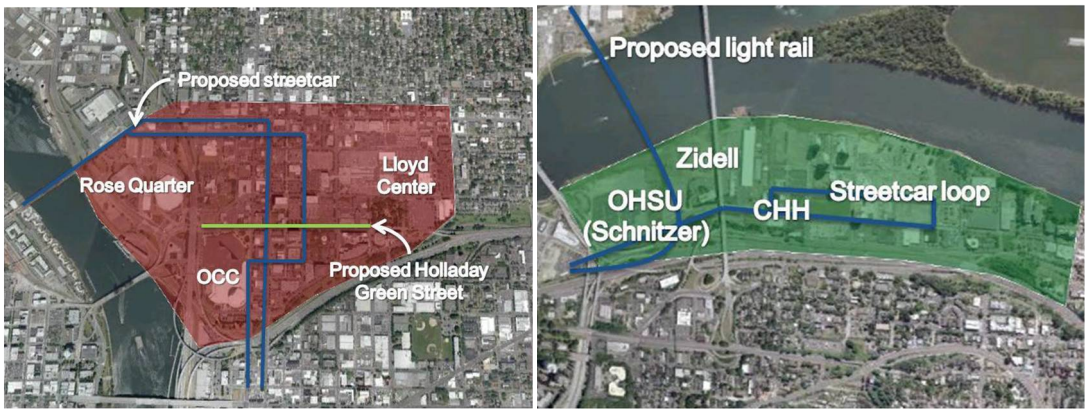
In 2011, South Waterfront Community Relations signed a Memorandum of Understanding with PoSI and the City of Portland to become one of the five pilot projects, and since it already had many certified green buildings, its focus became more on infrastructure,

[15] Transportation Management Associations (TMAs) are non-profit, member-controlled organizations that provide transportation services for a particular area and are generally public-private partnerships that have local government but that are comprised mainly of businesses (TDM Encyclopedia, 2017).

resource flows, and behavior programs. A Steering Committee was formed, and members included residents, property owners in the central district, OHSU and ZRZ Realty. A consultant was then hired to do an in-depth assessment of the South Waterfront project opportunities. For example, a comprehensive feasibility study on district energy was conducted, which involved one-on-one interviews with several local stakeholders. Ultimately, however, since new building were operating at such a high level of efficiency, it was determined that smart grid technology would not be cost-effective (EcoDistricts, 2015).

As part of the Districts Formation and Districts Assessment phases of the EcoDistricts Framework, in 2011, the north district of the South Waterfront Ecodistrict was accepted as one of 18 global projects to commit to the C40 Cities Climate Positive Development Framework, a program created by the Clinton Foundation to encourage large-scale sustainable urban development. A rigorous assessment was conducted in order to determine the baseline for becoming climate positive and to determine scenarios to achieve climate neutral goals.

Although it appeared that the South Waterfront EcoDistrict had the potential of becoming a thriving new sustainable community by the waterfront, its success as an "EcoDistrict" is quite limited. The EcoDistrict Steering Committee was disbanded in 2013, and all climate positive efforts are currently on hold. All "EcoDistrict" related projects are currently being led by the PDC, City BPS, and individual project investors. SWCR continues to look after its own sustainability initiatives related to community-building and transportation (EcoDistricts, 2015), but all EcoDistrict-related activities have fizzled. Given the SWCR's potential for being a great sustainability leader, why did these activities fizzle?



Figures 5.2 and 5.3: The Lloyd EcoDistrict (left) and South Waterfront EcoDistrict (right). Source: Compass Resource Management Ltd., 2010. Published with permission.

5.3.2. The Lloyd EcoDistrict: a business district that took off

The Lloyd EcoDistrict is located on the east side of the Willamette River and is made up of the Rose Quarter (a sports and entertainment district) and surrounding area (refer to figure 5.2). It used to be an event centre and was not very walkable, with few residents (since it was mostly office and commercial). The district is over 400 acres large and has more than 16,000 employees working on site, but most of whom live outside the district (Portland Sustainability Institute, 2012b). The district has mainly large institutional buildings, such as the Lloyd Center Mall, Rose Quarter, and Oregon Convention Centre. Lloyd has several large property owners, such as American Assets Trust, who owns Hasalo on Eighth (a 16-acre site purchased for $92 million in 2011) and Kaiser Permanente, who owns three city blocks (Guo, 2013).

In 2007, interest in new developments in the Lloyd district of Portland were on the rise; in fact, there were at least four major developments that were on the drawing board and being planned in the Lloyd District (Director at Oregon Solutions, 2017). The director of Oregon Solutions, who did some consultancy work on the area just around the time that Lloyd signed on as an ecodistrict recalls, “One of [the developments] in particular was going to be a very big green building, and that developer started talking to people about ‘maybe we could have all of the developments kind of coordinating together so that we create a kind of ecodistrict.’” The then mayor, Mayor Sam Adams, wanted to be a co-convener of this ecodistrict-making process, as did the county and Metro, and so the heads of these three governing bodies were all named as co-conveners and a Declaration of Cooperation was signed to support and finance the pilot project over a period of three years, and which outlined the roles and responsibilities of each of the stakeholders involved. The purpose of the Declaration of Cooperation was to fund and organize a three-year formation period that involved hiring a Sustainability Director, completing a performance baseline, and implementing projects (EcoDistricts, 2015). A working group in Lloyd was formed between several powerful business owners in the area, including the Lloyd Center Mall, Oregon Convention Center, Bonneville Power, Rose Garden Arena, and the State of Oregon to craft a joint vision.

When PoSi and the City’s BPS approached district stakeholders in Lloyd to recruit them to become a pilot project site, the Director of the Lloyd Transportation Management Association

conducted interviews with district stakeholders and convened early stakeholder meetings to gauge the level of interest in becoming an EcoDistrict, and the interest was high (G. L. Executive Director, 2017). As a result, they formed a Resource Advisory Council and agreed to become one of Portland's five EcoDistrict pilot projects. In the Districts formation and assessment phases of the Framework, the Lloyd Resource Advisory Council (made up of the large property developers and managers, as well as representatives from the Lloyd TMA) collaborated with a Portland Development Commission (PDC) staff, PoSi staff, and BUP staff to develop a roadmap for the Lloyd District. PoSI staff facilitated meetings to help develop the roadmap and were very involved in guiding Lloyd District stakeholders through the process, all the while testing their own framework and methodology internally at PoSI.

During the District Formation phase, district stakeholders – mainly business owners and representatives from Lloyd TMA -- came up with a clear vision: "The Lloyd EcoDistrict aspires to be the most sustainable living-and-working district in North America." (Portland Sustainability Institute, 2012b) Stakeholders also decided that the most appropriate governance structure for the Lloyd EcoDistrict was to form a 501(c)6 non-profit organization that serves business interests (ibid, p. 60). In its beginnings, the Lloyd EcoDistrict focused on energy efficiency, waste reduction, and transportation as its key issues, as well as fostering a greater sense of place. For example, the district created an Energy Action Plan to work with small to large businesses in order to identify energy-related goals. The *Lloyd EcoDistrict Roadmap* (Portland Sustainability Institute) outlines the key goals of the EcoDistrict as creating a prosperous, efficient (water-, energy-, and waste-wise), biophilic, and connected district (p. 10). More specifically, the largest "Living Machine"[16] in an urban setting to collect and treat storm water; on-site reuse of wastewater for irrigation purposes, flushing and cooling; eco-roofs; and space for bikes and Zipcar sharing are some of the most notable ambitions of the Lloyd EcoDistrict (Guo, 2013). Figure 5.4. describes when the EcoDistricts Framework 1.0 was applied and the different points at which various stakeholders were involved in the pilot project process.

[16] A "Living Machine" is an ecological sewage treatment system that is designed to mimic the cleansing functions of natural wetlands. The technology was developed by John Todd, an ecological designer, and is patented by Living Machine Systems.

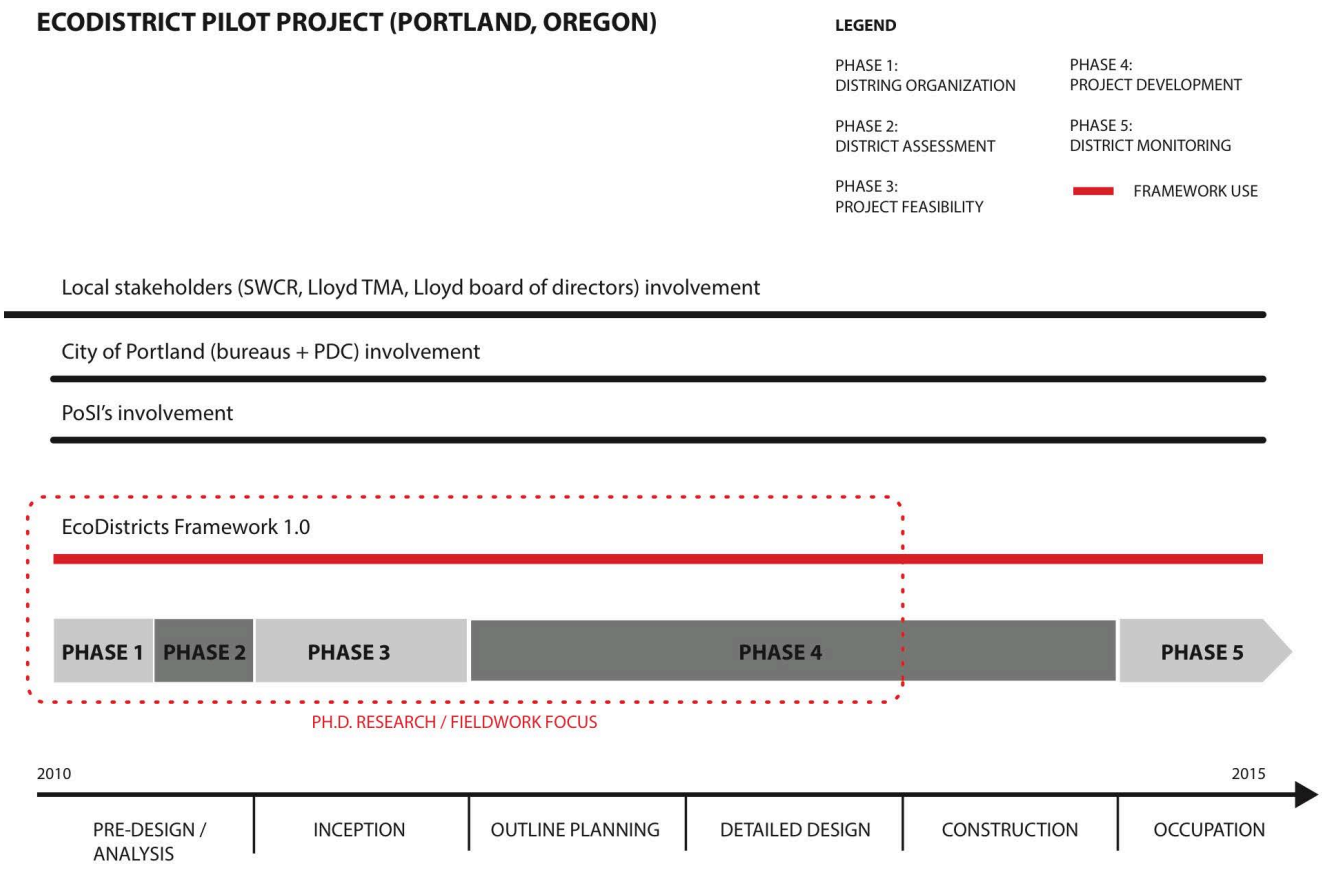


Figure 5.4: Summary of when the EcoDistricts Framework was applied to both pilot cases and the actors who were involved. Source: author.

The Lloyd EcoDistrict set itself apart from the other pilot projects by securing staff capacity and using the Lloyd TMA's existing governance structure. Today, Lloyd is thriving. It was integrated into the Business Improvement District, which provides stable and long-term funding for paying the Executive Director's salary and for other EcoDistrict-related activities. Two full-time staff continue to coordinate progress on district projects. In fact, it is the only one of the five pilot projects that is still going, since the other four have folded. For this reason, it is considered by PoSI and by City departments as the only success case of the five pilot projects.

So why did one EcoDistrict pilot project succeed and one fail? How did implementing the EcoDistricts Framework 1.0. in both pilot projects affect stakeholders differently? What were the underlying factors (internal and external) or attributes that led to the success of one and the failure of the other? The following sections describe some underlying factors, such as the political

and economic context, that influenced the pilot project process by creating obstacles, leading to different outcomes in each case study.

Up until this point, the previous sections have concentrated on describing the context in Portland and behind PoSI and the development of the EcoDistricts Framework 1.0. From this point on, the case study analysis as per the dimensions uncovered in the semi-structured interviews will begin.

5.4 External and internal factors leading to success and failure

The previous section described the Districts Formation process in the Lloyd District and South Waterfront EcoDistrict. It is important to note, however, that three major events happened that disrupted the integrity of the early eco-districts formation process and may be considered here as 'external inhibiting factors' in the pilot project process. These events put pressure on the pilot project process, but affected the Lloyd and South Waterfront eco-districts unevenly. These events can therefore be considered disturbances or obstacles that tested the different eco-district planning teams' ability to recover – their resilience -- and maintain momentum over time.

The first incident particularly impacted the Lloyd District in its beginnings: Mayor Adams got involved in a very public sex scandal that led the public to question his legitimacy as the mayor. As a result, the other two co-conveners who signed the Declaration of Cooperation in Lloyd "did not want to be in the same room as him" (anonymous interviewee). This resulted in the most unusual Oregon Solutions process that the consultancy had ever had, which the director refers to as a sort of "shuttle diplomacy." (Director at Oregon Solutions, 2017) During this process, some sub-committee meetings were held, but very few meetings with the whole team and all three co-conveners were held. Instead, the project manager from Oregon Solutions worked with the Portland Sustainability Institute and people from one of the governing bodies and they "cobbled together" a governing structure (Director at Oregon Solutions, 2017). In this sense, the sex scandal challenged the authenticity of dialogue in the process, since there was little face-to-face dialogue between the different stakeholders (see the DIAD and *collaborative rationality* models described in sections 3.3.3. and 3.3.4). For this reason, the districts formation

process and the stakeholder engagement and collaboration that was intended and outlined in the EcoDistricts Framework 1.0 did not go so much as planned, and the group's momentum momentarily decreased. Fortunately, the team was able to reorganize and recover as the steering group morphed into the official EcoDistrict Resource Advisory Council and board.

Second, the bottom fell out from the real estate market in the United Sates, which affected both the Lloyd District and the South Waterfront EcoDistrict. In South Waterfront, development slowed down significantly, and entire condo floors were left vacant and luxury penthouse apartments originally valued at $4 million sold for $1.4 million (Rommelmann, 2015), leading to a notable loss of resources and capacity.

In Lloyd, all four of the major developers who had been collaborating just prior to signing on as an official ecodistrict pilot project decided not to go ahead with their projects. The four developers, prior to the economic crisis, had felt there was an economic advantage to making additional investments in green buildings by leveraging their projects together and investing in common infrastructure; however, after the economy crashed, it no longer became financially viable to go ahead with the project proposed by the different developers. Although the original vision created by the four developers was not implemented in the Lloyd District, what did end up happening during the Oregon Solutions facilitated process was that the stakeholders came to an agreement about how they would like to work together, and these agreements served as a kind of structure and model for other EcoDistricts in the city (Director at Oregon Solutions, 2017). According to an employee from the Lloyd TMA, Oregon Solutions came into the district and "got everybody charged up, and [they] even had the mayor in some of those early meetings to find out if this was a possibility, and people got excited about it." However, the governor's office subsequently pulled back all of those funds, and the funds that were available were diverted directly to the consultants, and the money eventually dried up (ibid). Once the money dried up, it felt, at least from the Lloyd TMA's perspective, as if the consultants and the three levels of government had baited them and just walked away. The Lloyd TMA employee recalls thinking, "Hey, wait a minute. We did all this work and now you're going to cut us loose? Well what's going to happen here?"

The financial crisis also later led to an upheaval in leadership in Lloyd. For example, from the first year to the second year in the Lloyd District pilot project process, there was a massive turnover of who were formally long-time Lloyd District supporters. Moreover, many firms and headquarters left the area, leading to a loss of leadership and capacity. The Lloyd District Executive Director reflects, "We did fine in terms of that change, because there were still some very long-standing individuals who remained, but it was still tough to see internal capacity just leave. It's hard for any organization to make up for that, and it was hard for us too." (L. E. Executive Director)

And third, a change in leadership at the municipal level in late 2012 left the City in an odd position with respect to the EcoDistrict pilot projects, since they had really been the "baby" of the former mayor Sam Adams. When mayor Adams left office, it was announced that the pilot projects would no longer be managed by PoSI but would be handed over to the municipal authorities, who as will be demonstrated later in this chapter, did not view themselves as active leaders. Indeed, this change in leadership at least in part, contributed to the ambiguous stakeholder roles and responsibilities that are described in section 5.4. The Lloyd District Executive Director explains, "The City has not played a role in this for us and that is because this was a former mayor's concept and that mayor is no longer in power, and so the current mayor's office has no incentive to carry on [the previous government's] mandate." The turnover in mayors in Portland and change in government therefore left a leadership hole in terms of who and how the EcoDistrict pilots should be managed, which created yet another obstacle or disturbance for the ecodistrict pilots.

5.4.1. Internal enabling factors in the pilot project process: capacity, leadership, and belief in collaboration.

In spite of the external inhibiting factors or obstacles created by the political and economic climate in Portland, the two pilot projects faced these challenges in very different ways. Interviews and documents analysis allowed the researcher to uncover certain 'internal enabling factors' or attributes of the planning teams, whose presence allowed Lloyd to succeed, and whose absence caused South Waterfront to fizzle. In other words, these internal attributes were

necessary for overcoming the external factors / shocks, and, unsurprisingly, played important roles in stakeholder relations and collaboration, described in sections 5.4 and 5.5. of this chapter. The in-built capacity, leadership and belief in collaboration of the different stakeholders or stakeholder groups affected commitment to EcoDistricts' objectives and the groups' momentum differently in the two case studies. In Lloyd, in-built capacity, strong leadership, and belief in the mission, vision, and collaborative process ensured that the EcoDistricts team's momentum was maintained over time and that it could overcome ambiguity in terms of stakeholder relations. South Waterfront, on the other hand, had little built-in capacity, hesitant leadership, and little belief in the EcoDistricts' mission and collaborative process. The result was that the South Waterfront pilot project team lost momentum and disbanded in 2013, and struggled to overcome difficult stakeholder relations. More detail on these internal factors / attributes is given below.

In-built capacity

It is important to note that stakeholder capacity differed from pilot project to pilot project. The question of what types of stakeholders were at the table (whether they were small players or large institutions, whether they were volunteer-run organizations or full-time, dedicated staff, and whether they were government or private sector players) and the resources/assets that the stakeholders brought to the table determined their capacity and the ability for the pilot process to move along. Someone from the Portland Development Commission explained, "Out in the neighbourhoods [such as Gateway and Foster Green], you're working with volunteers. There wasn't a paid staff person. And I think that was the hardest part – what can they do? How can they implement that?" (PDC employee). Similarly, a Green Building Manager from the BPS explained how lack of capacity often hindered the pilot projects: "Every once in a while, there was a sort of bright light …that would excite me in the moment, but it was often short-lived because I always felt that capacity was an issue, and understandably so. Sometimes it was volunteers and often times it wasn't the right person." (Green Building Manager, 2015)

In contrast to Foster Green and Gateway (the two pilot projects "in the neighbourhoods"), the Lloyd District was formed primarily of private real estate developers and property managers

who had a lot of credibility and who were essentially power-brokers in the City (PDC employee, 2015). Moreover, the Lloyd District also has a full-time dedicated staff whose salary was paid for by ten property owners and managers in the neighbourhood, who continue to keep the project alive. This staff person, the Executive Director, explains, "I think a district having the capacity to hire a full-time staff person is key. You have to have some person that's embedded in the district and has their full-time job to keep the thing moving, keep the idea alive, work the concept and move the notion forward. And absent that, it's almost impossible to gain any traction." (L. E. Executive Director)[17]

Lloyd was led by developers whose day job is to build and create changes in the neighbourhood (Program Officer from PoSI, 2016). Moreover, Lloyd raised the funds to pay a full-time staff – an Executive Director -- for three years, who then hired someone else as well to help keep the project growing. Moreover, the Lloyd EcoDistrict pilot project was built off work that had begun in 2008 when several developers came together. The Executive Director explains that when she was hired, "there was already a built-in stakeholder group essentially." (L. E. Executive Director) The Lloyd EcoDistrict team thus had in-built capacity that helped it overcome obstacles and thrive.

In South Waterfront, two of the largest land-owners got behind the project: Zidell Realty and Oregon Health & Sciences University (OHSU). A staff from the PDC argues, "When you have these big powerful entities behind it, it seems to work a little bit better." (PDC employee, 2015) However, unlike Lloyd, South Waterfront was not able to pool together resources and attract private investment in EcoDistrict initiatives. While South Waterfront also had a dedicated full-time staff-person, the Executive Director of South Waterfront Community Relations, this person already a specific mandate to fulfill, and EcoDistricts was an add-on to an already stressful job. Thus South Waterfront did not have the same kind of in-built capacity that the Lloyd EcoDistrict did.

[17] That being said, however, the original project vision developed by the four large developers and facilitated by Oregon Solutions was far from implemented. The director of Oregon Solutions reflects on this and says, "I think that one of the things that we learned is that when you are doing collaborative partnerships between government and business and developers, it's tricky, because government has to continue, but individual players on the private sector side, they are subject to the vagaries of the market system. So there's a bigger risk when you are involved." (Director, Oregon Solutions)

Indeed, it was widely agreed upon in several of the interviews with stakeholders involved in the pilot project process, as well as in secondary sources, that the capacity of the different stakeholders was key in the process, and that this was primarily manifested through the types of stakeholders involved and their level of involvement. For instance, an interviewee cited in a Portland State University student's thesis explains, "In the successful districts, there's a person thinking about collaboration, the collective, the drum beat." (Fletcher Beaudoin in Waddick, p. 41) Similarly, Joss (2015) also points to the level of capacity as a reason for the five pilot projects progressing unevenly, arguing that the most advanced EcoDistricts were able to progress more seamlessly because they had a large institution to anchor the project, and they had actors with certain knowledge and expertise (such as knowledge of the planning and technical assessment process) and were "able to be equal partners with the city." (Joss, 2015, p. 190) Finally, PoSI extracts investing and prioritizing in staff capacity and funding as one of its main lessons learned in the *EcoDistrict Pilot Program Evaluation* report (February 2015). This, plus a commitment of dedicated funding and a sharing of power helps to ensure progress. In essence, capacity is dependent on a stakeholder group's assets (staff, resources) and distribution of power.

Leadership

Another internal enabling factor or attribute besides capacity in determining how the ecodistrict pilot projects played out was the issue of leadership, which was highlighted in several of the interviews with pilot project stakeholders. Several interviewees, for instance, agreed that leadership in the Lloyd District was strong, or that Lloyd was "a model of strong leadership" (Green Building Manager, 2015). One interviewee said that the Lloyd Executive Director was a 'green champion of sorts and "was pushing like crazy to get things to happen." (PDC employee, 2015) The Lloyd Executive Director herself also recognizes the importance of strong leadership in ecodistricts. In an interview with her in December, 2015, she explained that she was the one in charge of planning how to operationalize the ideas coming from the vision formed by the Steering Committee. She adds, "You really have to have somebody who understands how to make that work and it is a really unique set of personal and professional experiences that allows somebody to navigate within the realms of purchasing, and building, construction and

government and the public realm and the private realm and social issues." (L. E. Executive Director, 2015)

In contrast to the Lloyd Executive Director, the Executive Director of South Waterfront Community Relations did not consider himself a strong leader of the EcoDistrict mission. In an interview with him in November 2015, he explained, "If I'm the leader of this EcoDistrict, then I wouldn't give myself a good grade because I didn't really push [the EcoDistrict agenda]. I didn't think it was necessary. I don't think my leadership was fantastic, because I kind of yielded to people and I didn't push it." (SWCR Executive Director, 2015) A Green Building Manager from the Bureau of Planning & Sustainability, who sat in on many meetings with the South Waterfront EcoDistrict, characterized the SWCR's Executive Director as a "hesitant leader" of the ecodistrict pilot. She explains, "In addition to his day job, he was asked to move [the EcoDistrict] concept along. And at times, it had some bright lights, but most of the time it just sat there as this other thing, like "What are we going to do with this?" (Green Building Manager, 2015)

The role of leadership should not be underestimated as an internal enabling factor that contributed to the relative success and failure of the two pilot projects. PoSI explains in their pilot program evaluation report that there is no replacement for dedicated senior leadership to coordinate the stakeholders, commitments, planning, and integration and implementation of projects (EcoDistricts, 2015). In summary, leadership was identified as an important attribute that helped Lloyd recover from the external obstacles and to navigate certain challenges in stakeholder relations and collaboration.

Belief in the pilot project mission, vision, and collaborative process

A final element that surfaced in the interviews as a key internal enabling factor to how the pilot projects played out was the belief in the project mission, vision, and collaborative process. In the Lloyd District, several large property owners had been working together for a few years already, and were committed and believed in a vision for the district. They believed in collaboration to yield results, so much so that they pooled together resources to finance the hiring of an Executive Director to take over the EcoDistricts agenda. In South Waterfront, on the other hand, there was not a high degree of belief in the ecodistrict-building process. On the

contrary, leadership in South Waterfront felt that being a pilot project was “unnecessary” and extra work (SWCR Executive Director, 2015). It was arguably a mistake on the part of PoSI and the PDC to solicit South Waterfront as a pilot project, given its lack of enthusiasm or belief in the design process. The theme of belief in the process was therefore a contributing factor to the success or failure of the pilot projects and affected the planning team’s ability to withstand obstacles in the pilot project process.

This section described some of the external factors that acted as shocks or pressures to the pilot project process. From interviews, with the support of documents, it was possible to discern the internal enabling factors or attributes that helped Lloyd succeed, but whose absence led to South Waterfront abandoning the ecodistrict process. The interplay between these external factors and internal attributes is quite complex, and it had rippling effects in terms of stakeholder relations and collaboration. The following section makes the link between these different elements, and demonstrates how some of the external factors led to challenges in terms of stakeholder relations. Once again, the presence of certain internal attributes helped Lloyd recover from these challenges; however, other important elements also surface as ingredients for success and for a resilient planning process.

Figure 5.5. summarizes the contributing factors that led to the success or failure of the pilot projects. It categorizes these contributing factors as either internal or external and inhibiting or enabling. While the external inhibiting factors in the case study were at the municipal or even national scale, the internal attributes focus on the immediate EcoDistrict planning team. This figure serves as an analytical framework for sections 5.5 and 5.6..

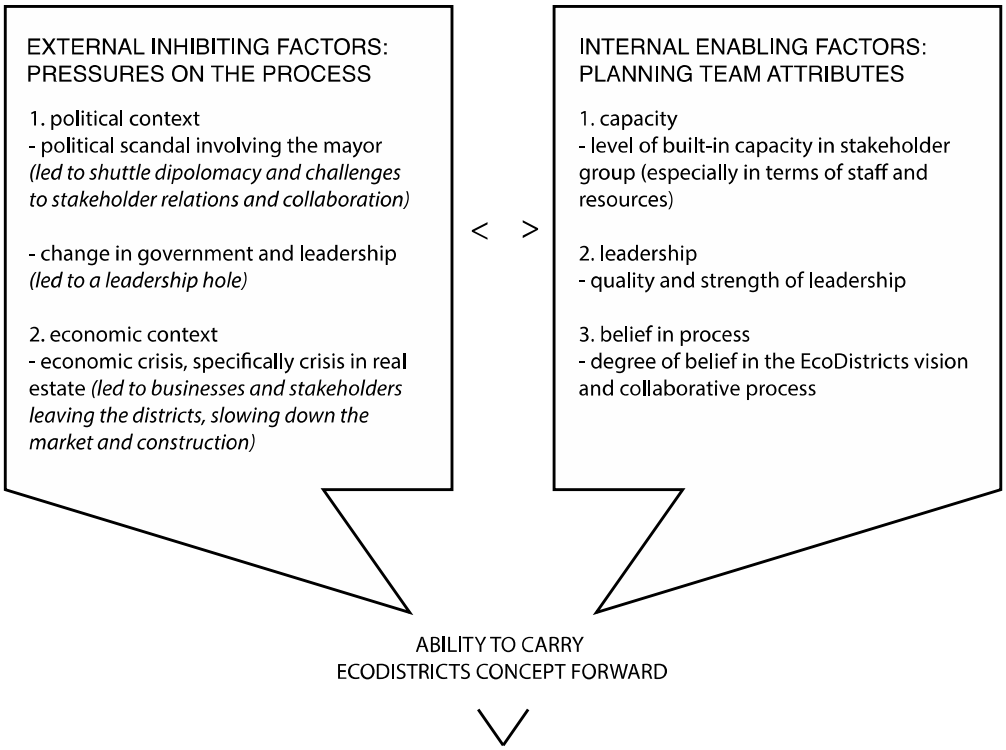


Figure 5.5.: External and internal contributing factors for carrying the ecodistricts concept forward. Source: author. Graphic inspired by Fayazi & Lizarralde, 2017.

5.5. Stakeholders relations in the EcoDistricts Pilot Projects

EcoDistricts in general, and the EcoDistricts pilot projects in Portland in particular, require the collaboration of several different stakeholders over a long period of time. The pilot projects required the collaboration of PoSI, the City of Portland (including several different bureaus), the Portland Development Commission, neighbourhood associations, community members, business associations, transportation bodies, and so forth. The roles and responsibilities of each stakeholder individually, and the relationships between each stakeholder are often quite complex. Drawing from the project management field and the concept of "stakeholder" described in Chapter 3, figure 5.6 applies a standard model of stakeholder relationships (Raynaud, 2015) to the case of the EcoDistrict pilot projects in Portland. A fourth type of stakeholder is added here – the EcoDistrict leaders themselves—who partnered with the political stakeholders (City of Portland Bureau of Planning and Sustainability & Multnomah County) and

had a managerial relationship towards the project. Community members had a limited role and are thus represented with a dotted.

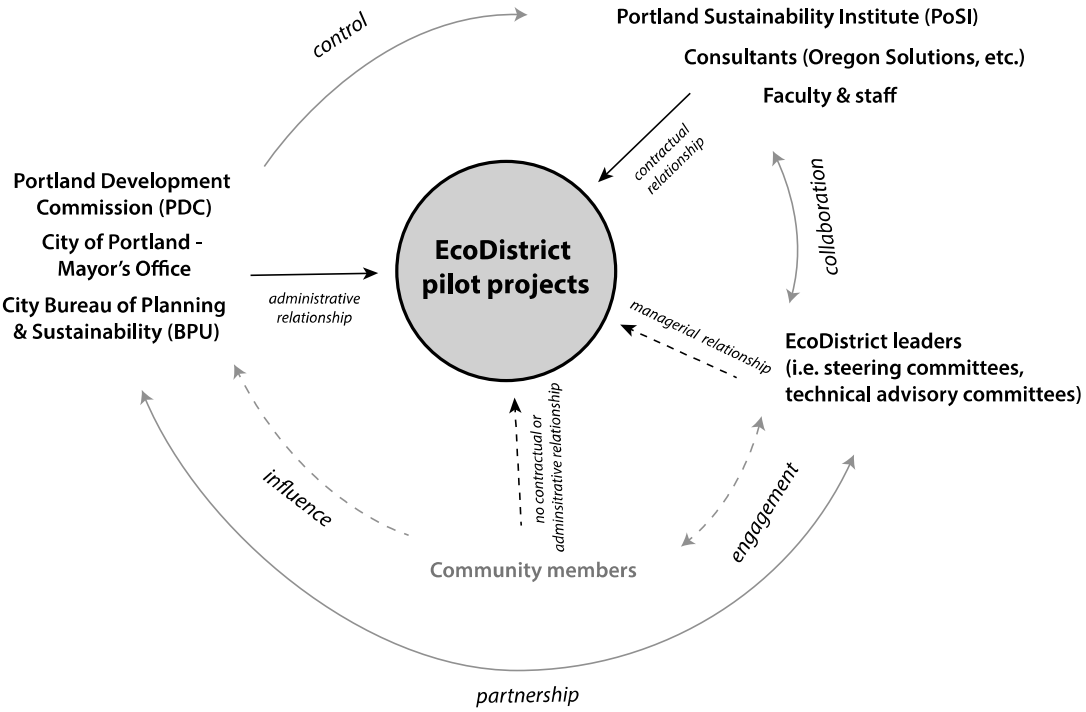


Figure 5.6: Sociogram of EcoDistrict pilot project stakeholders and their relationships to the pilots. Source: author. Inspired by M.M. Raynaud, 2015. The bold text indicates the stakeholder type and the arrows indicate the type of relationship between stakeholders. Solid arrows represent more official relationships (such as the partnership between EcoDistrict leaders and the City), whereas dotted arrows represent more informal relationships (such as that of influence of community members on the City).

5.5.1. Stakeholder interests, roles and expectations in Portland's EcoDistrict pilot projects: ambiguous, overlapping, redundant, and uneven stakeholder roles

Interviews with seven stakeholders who were involved in the EcoDistricts pilot project process in Portland from around 2009 to 2013 revealed how applying the EcoDistrict Framework led to challenges between stakeholders. More specifically, results from interviews revealed how ambiguous stakeholder roles, overlapping stakeholder roles, and sometimes uneven stakeholder roles led to differing expectations on the part of the various stakeholders. These differing expectations created conflict in the pilot project process over whether EcoDistricts should be top-down or bottom-up initiatives. This argument is presented in figure 5.7. and is developed throughout the next several sections of the chapter.

As will be shown in the next few sub-sections, the presence of external inhibiting factors and internal enabling factors also affected stakeholder relations; the presence of the three internal attributes allowed Lloyd to better cope with ambiguity and differing expectations, while the absence of these attributes contributed to South Waterfront's ecodistrict pilot project fizzling out. At the same time, however, certain specific elements to stakeholder management emerge that help expand our understanding of this field and of collaborative planning.

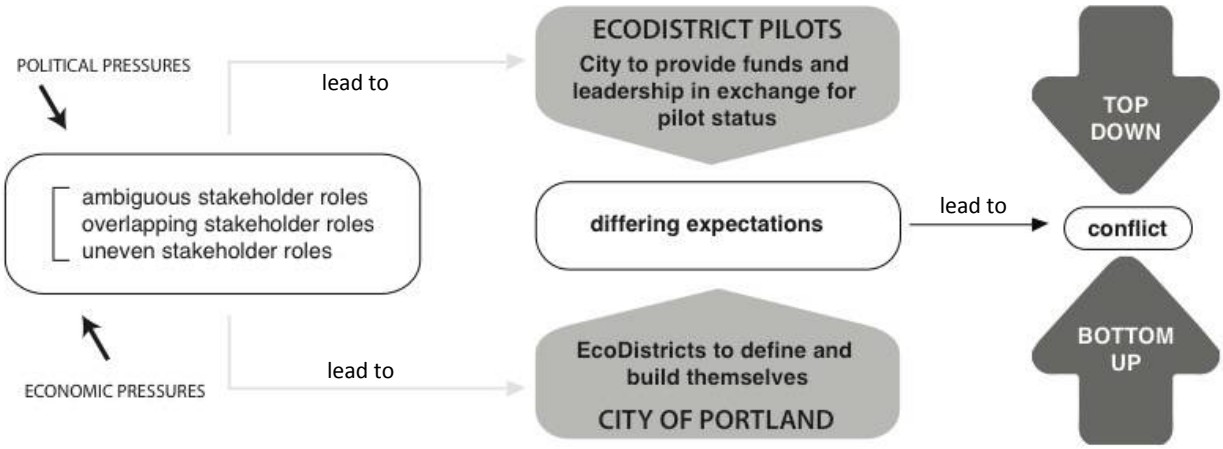


Figure 5.7: How ambiguous stakeholder roles in the pilot projects generated conflict. Source: author. On the left, pressures lead to ambiguous, overlapping and uneven stakeholder roles lead to differing expectations, which lead to conflict.

5.5.2. Ambiguous stakeholder roles

Perhaps the most discussed and most contentious issue in interviews with stakeholders involved in the pilot projects was the issue of ambiguous stakeholder roles. It became clear from the interviews that forming EcoDistricts is not just a matter of "do you have all the right people at the table?" – as is heavily highlighted in PoSI (now EcoDistricts)'s marketing material, but it is also important to understand what each stakeholder can bring to the table. It is important to ask (Raynaud, 2015): Who is the stakeholder? What does the stakeholder want? How will the stakeholder go about obtaining what he/she/it wants? The answers to these questions fundamentally need to be clear and transparent from the get-go.

In the case of the EcoDistricts, the role that the City played was highly contentious. The City invested money in the initiative, PoSI to lead it, funded the creation of tools and resources for a framework, and supported testing the framework in five pilot projects, so clearly they saw value in the initiative. They also funded all of the assessment work and some project feasibility

work for the pilot projects.[18] Furthermore, the City was also a signatory for each of the Memoranda of Understanding, so there was always the commitment from the City to be a supportive partner, but perhaps this support "was not as concrete or ambitious from the City as district stakeholders would have liked it to be." (Program Officer from PoSI, 2016) However, what was their role? And what should have been their role? The answer to this question depends on one's perspective and expectations, which in the case of the pilot projects, were quite divergent depending on who was being interviewed.

From the City's perspective, they saw themselves as only having a financial stake in the pilot projects, and that their role was rather passive; they should enable and support the EcoDistricts, but the EcoDistricts should be built from the bottom up. City stakeholders viewed their responsibilities as attending meetings, bringing together the five different EcoDistricts from time to time so that they could learn from each other, and providing financial and technical assistance. A program officer from PoSI recalls, "The city wanted EcoDistricts to thrive and succeed. They would come to steering committee meetings and they would provide a way for the community to feel like they were organized, and form a cohesive voice for the city." A Green Building Manager from the City's Bureau of Planning & Sustainability (Green Building Manager) explains that her role was to be an "observer" and to bring the EcoDistricts together when needed: "I always saw myself as a resource but not as a leader of any of [the pilot projects]. I felt like they really needed to do their own work for their own community for their own time." (Green Building Manager) She continues,

> There was a lot of set-up for failure in the sense that every EcoDistrict felt like the City was going to do something for them, so I'd often sit in the room and they would be mad that the City wasn't doing things for them. And I was always under the impression that it wasn't about US doing for THEM, but because a lot of them were shoe-horned into being EcoDistricts, they expected it came with something. Instead it came with an acknowledgment that you exist, but it didn't come with authority. (Green Building Manager, 2015)

She also felt that the pilot projects were unjustly entitled in their expectations for authority and

[18] The City's financial contributions to the pilot projects primarily came from Portland Development Commission (PDC employee) funding, but some came from the Bureau of Planning & Sustainability (Green Building Manager) and some from the City general fund at the beginning as well (program officer, PoSI).

agency and contemplates that perhaps this entitlement came from "something that was sold to them when they became EcoDistricts." She recalls,

> I sat in the room with them many many times pointing their finger at me saying, "What are you going to do for us?" And I said, "Well what are you going to do for yourselves?" You know, I felt that there was that missing link of why do you expect to be special? And I'm not saying that they aren't special as people or as a mission. (Green Building Manager, 2015)

For her, the forced expectation was difficult to deal with in the pilot project. The pilot projects expected and requested money, support for organizational development, reimbursements from development charges in their area, grants, and "options to money" so that they didn't need to pay for certain projects. But the City would have preferred to frame the dynamic as "how do you leverage the work of the City to really do what you want to do?" (Green Building Manager, 2015).

Other interviewees outside the Green Building Manager from the Bureau of Planning & Sustainability, however, indicated that there was some confusion over the City's roles and responsibilities in the pilot projects even from within the city. One interviewee explained that at the time of the interview in December 2015, confusion over the role of the City continued to be a focal point of discussion in the EcoDistricts Target Cities program:

> I was actually back at the EcoDistricts office this week talking about the pilots to all the new staff there and one thing that came out of it was this question of "what does it really mean from a city policy standpoint to be an EcoDistrict?" And this whole thing we talked about from the pilot projects for a long time, is there some of official designation, is it a zoning designation, or zoning overlay? Is it that the district provides X, Y and Z and the city provides A, B, and C?

A program officer from PoSI explains, "I think that throughout the whole pilot, and even now, there's this question of "what does the City really want out of EcoDistricts?" What was their role? In some instance, people will say "it was too strong, they were too involved. They were forcing us down this very specific path." In some cases, people will say "oh they weren't involved enough. They didn't provide funding or resources."" This ambiguity worsened when mayor Sam Adams left office and there was a change in leadership. The City's role in the pilot projects became even less clear. In October 2012, a resolution was made before City Council to end PoSI's role in the

pilot projects and to transition the EcoDistricts over to the city (Program Officer from PoSI, 2016), "and the question was, what is the City's role going forward? And it essentially became about continuing the conversation with the five pilot projects and the leaders from the five pilots, providing some technical resources and support and I think from the City's perspective, they felt that was all they could provide at that point." (Program Officer from PoSI, 2016)

From the local EcoDistricts' perspective, on the other hand, the City should have played a much more active role in the pilot project process. Perhaps the main source of frustration for the EcoDistricts was that they were coaxed by the City and PoSI to sign on as EcoDistrict pilot projects in the first place, were guided through a districts formation and assessment process with the City and PoSI, but then not given enough resources to implement projects. Many thus felt that they had had the rug pulled out from under them. Moreover, specifically stakeholders from South Waterfront Community Relations in the South Waterfront EcoDistrict did not see any added benefit of being an EcoDistrict, since sustainability initiatives were "moving along on their own." (SWCR Executive Director, 2015) The Executive Director from SWCR argues, "It's just not needed. So, sure it was there, but it was almost superfluous. It was unnecessary." (SWCR Executive Director, 2015) Furthermore, he emphasizes:

> PoSI came knocking. Honestly, we pushed them off three times, saying we don't have time for this, we don't want to do this. We have other things we need to do. The reason that we pushed back was: a) that you're creating this agenda but you're not bringing anything to the table. You're basically saying, "Here's a whole bunch of procedures and process" and we're saying, "Well what are you giving us? What's the purpose? So we have an EcoDistrict, who gives a shit?" And honestly, we were like, "The buildings are LEED certified. They are damn green! The infrastructure is being developed on the fly so it's as good as you can get right now, and the community part, we're doing!" So you're wrapping it all together in this package, but what's the point of signing up? You tell me. (ibid)

Moreover, in the beginning, the EcoDistricts felt that they were getting the support they needed from the City, but then were abandoned. One interviewee explains that in the early stages, "There was a lot of cooperation on the part of the City. We had some city planners who were involved that lent their time and their expertise to this in terms of getting demographic information and hitting county records and getting a good understanding of what was involved

here. So I think there was a lot of coordination and support on the part of city staff time. I know that we couldn't have gotten it to the point that we did without their support." (employee, Lloyd TMA) However, an employee from the Lloyd Transportation Management Association (Lloyd TMA) also described how the transition from being guided by the City and PoSI to being on their own was quite abrupt: "I think it was a good effort in the beginning and I felt like we were working along step with them and that we were being held and guided through this process, and then I felt that the handholding, I don't know if it abruptly stopped…but it felt like something soured between PoSI and Lloyd EcoDistrict and I wish that there was more of a transition to success or ongoing stake in Lloyd EcoDistrict's success." He continues, "I think that to say that we were hung out to dry is too strong, but I think that there was a lot of disappointment. I think that the community thought that they helped build this excitement for this opportunity, and that they were going to help coax it along with some seed money, and then once that seed money was pulled from it, there was this, "Wait a minute? What did you guys do here?" (employee, Lloyd TMA) An interviewee later insinuates that the City really did the bare minimum: "I feel like Lloyd EcoDistrict is a bit on its own in terms of support from public agencies at this point. [The City] did their due diligence, they checked their boxes, they said, "We got you to this point, now you need to fly on your own."" (employee, Lloyd TMA) Similarly, the Executive Director from South Waterfront Community Relations in the South Waterfront EcoDistrict explains, "It felt like for the EcoDistricts that were here, it was kind of like having the rug pulled out from under them. They were like, "Cool, now what? Are we an EcoDistrict? I don't know." The relationship [with the City] was kind of frayed." (SWCR Executive Director, 2015)

Whereas the City might argue that the EcoDistricts wanted to have their cake and eat it too (since they wanted control over what was developed and how, but they expected funding and special treatment from the City), the EcoDistricts believed that they should get *something* in return for their pilot project status. A program officer from PoSI explains how the leaders from the EcoDistricts felt: "We want funding, we want grants for EcoDistricts. If you really want to see something happen, we need the resources to fund it." (Program Officer from PoSI) Moreover, in many of the pilot projects, being an EcoDistrict had not been their primary mission (Green Building Manager, 2015). The EcoDistricts generally had another core mission, and being an

EcoDistrict could support that mission or be a small subset of that mission, but "they never really figured out where [being an EcoDistrict] should live and if there was enough momentum in the community to keep it going." (Green Building Manager, 2015) Moreover, in the case of the South Waterfront EcoDistrict, SWCR felt that a broader sustainability agenda promoted by PoSI was "beyond their mandate and resources." (EcoDistricts, 2015)

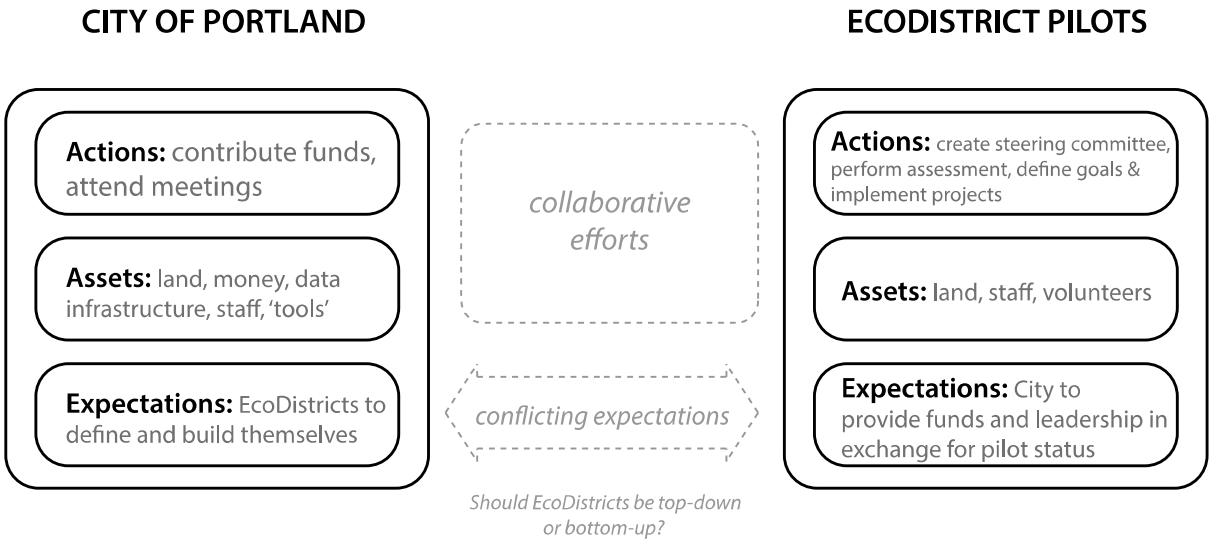


Figure 5.8: Conflicting stakeholder expectations. Source: author, inspired by the work of M.M. Raynaud, 2016.

5.5.3. Overlapping/redundant stakeholder roles and uneven stakeholder roles

Besides ambiguous stakeholder roles and responsibilities, interviewees also mentioned *overlapping stakeholder roles, redundant stakeholder roles,* and *uneven stakeholder roles.* In the first instance, the Green Building Manager of BPS explained that in some instances, the EcoDistrict leaders and the advisory committees sometimes had overlapping roles with other well-established neighbourhood associations or commercial business districts in the area. She explains, "I think [the EcoDistrict pilots] expected to have more authority over what happened in their community in terms of what gets built, to be a gatekeeper for their community when there is already a fairly well-established neighbourhood association network as well as a commercial business district, so [the pilots] are these gatekeepers, but there are already these watch dogs of the community, and so [the pilots] expected to have more authority than these fairly well-sanctioned ones." (Green Building Manager) Another interviewee discussed the drawbacks of

redundant stakeholder roles when the steering committee of the South Waterfront EcoDistrict was comprised of the same members as the South Waterfront Community Relations board: "We initially did have a committee and that's the thing that totally fizzled out. Honestly, we haven't met in four years. And the reason being that steering committee was basically our board, so they were like "Why do we have to meet again? Didn't we just meet?" So we can just have an hour-long board meeting and talk about EcoDistricts for ten minutes." (South Waterfront Community Relations) And finally, one interviewee described the *uneven role* that the City played with each of the five pilot projects. This interviewee notes, "Depending on the opportunity that the City saw and what role they felt was appropriate for themselves, they played a bigger or smaller role." (anonymous interviewee)

It is worth concluding this section with a quote from a program officer at PoSI: "In terms of a zoning designation, I don't think it's essential [for the EcoDistrict pilots]. I think as long as the City's role and contributions are really clear, as well as the neighbourhoods' that that's what it takes, and so I know that in the National Target Cities program that EcoDistricts is working to more clearly define the role of the neighborhood stakeholders and the role of the City, and I think it could look different in each neighbourhood or in each city." (Program Officer from PoSI, 2016) This quote highlights just to what extent it is important for the stakeholders in ecodistrict pilots to clearly understand their own roles and responsibilities as well as those of the others at the table. In the end, it does not matter as much what "special status" a pilot project is given (an official designation, a zoning designation, a zoning overlay, a non-profit status, etc.); what matters more is how stakeholders mobilize around a certain issue, depending on their *roles.*

5.5.4. How did the pilot projects cope with ambiguous, overlapping, and uneven stakeholder roles?

The ambiguity over stakeholders' roles and responsibilities in the pilot projects led to two very different responses in Lloyd and South Waterfront. Whereas in South Waterfront, relationships between the district and PoSI / the City appear to have frayed and for the pilot project operations to fizzle out, the Lloyd District took an entirely different approach. Due to the fact that the stakeholders in Lloyd had a great deal of capacity (large-scale stakeholders whose

day jobs were to look after the future of the Lloyd District) leadership, and belief in the process, the Lloyd District took matters into their own hands and became more autonomous. As previously mentioned, ten major property owners and managers in Lloyd came together and each pledged to contribute $10,000 per year for three years in order to hire an Executive Director to implement the EcoDistricts vision. Together, they applied to become a Business Improvement District (BID), which required approval from the city, but no other kind of support or involvement. The Executive Director of Lloyd recalls,

> A BID is a thing that a district can create for itself. It has to be approved by the City and the City has a role in terms of being the third party that collects the assessment, but as far as what kinds of things the Business Improvement District will fund or do, the City has no role to play in that. And as far as creating that Resource Advisory Council, it was all created within the district. So the district said to itself, to its own members, "Who wants to participate in this?" [The Lloyd TMA Director] was able to say, "This is something we should consider and if we do consider it, we should put some skin in the game in order for us to actually be able to leverage a higher level of participation on the part of the City. (L. E. Executive Director, 2015)

The Lloyd District and its board of Directors also successfully gained 501©(6) status, a type of non-profit organization that advances business interests, rather than charitable interests, and is usually made up of individuals, companies, business leagues, and chambers of commerce (Sherman). As of 2017, the Lloyd District is in the middle of trying to change this status to a 501(c)(3), a non-profit organization with charitable interests, to expand its mandate to more community building activities that will allow donors tax write-offs (employee, Lloyd TMA). So whereas South Waterfront's attitude seemed to be "We don't understand the point of being an EcoDistrict anyway, so we'll just let that stuff go and concentrate on our core mission" (demonstrating a lack of belief in the process), Lloyd's attitude seemed to be more like "We don't need the City anyway, so we can do this on our own."

Many of the findings from the interviews are also supported by findings in secondary sources, such as publications from the Portland Sustainability Institute itself (internal pilot project evaluations and other documents) and studies conducted by other researchers. For example, several documents support the finding that *ambiguous stakeholder roles* impacted the pilot

project process. In the Lloyd EcoDistrict Roadmap document, it is written that "[a]n immediate priority for the Lloyd District is clarity around ongoing City of Portland support for EcoDistricts. Essentially this conversation is about roles and responsibilities and negotiating what the EcoDistricts will do in exchange for city support and investment." (Portland Sustainability Institute, 2012b) Building on this last point, the report calls for further clarity concerning the roles of the EcoDistricts and what an EcoDistrict actually is. It calls for a strategy that would "work in partnership with the other four EcoDistricts and the City to develop official policy designation for EcoDistricts." (ibid) Finally, the Lloyd EcoDistrict Roadmap also calls for the City taking the lead in EcoDistricts: "The most significant recommendation to come from this EcoDistrict Roadmap process is that the Bureau of Planning and Sustainability should take responsibility for leading and managing the City's EcoDistrict program going forward." (p. 60)

5.5.5. Should EcoDistricts be top-down, bottom-up or both?

The conflicting expectations that the City of Portland had (with of course, the support of PoSi) versus the expectations that local EcoDistrict leaders had led to a fundamental tension between whether EcoDistricts should be top-down or bottom-up endeavors. It also raised questions about the sharing of power. The Program Manager from PoSi summarizes this tension perfectly:

> There were a lot of frustrating parts! Ultimately, it was a pretty politically charged initiative because it was a challenge between this idea that was in a lot of ways driven by the City, because they were funding our organization….so this concept really being supported and driven by the city, with the fact that in order to be successful, it had to be really driven by the neighbourhoods. And so figuring out that balance between what role the City plays and what role the neighborhoods plays and making everyone feel like they have got skin in the game and they are getting something out of it was challenging.

It becomes evident that the beginnings of the EcoDistrict pilot project process was a top-down endeavor, supported and financed by the City, and facilitated by PoSI. The five EcoDistricts were coaxed into being EcoDistricts, and so did not evolve as a bottom-up process. A Green Building Manager from BPS recalls the pilot projects saying, ""Yeah, we were just told that we're an

EcoDistrict" and you go figure it out." She explains that that "set off why we see such poor success. Not everyone was well-positioned to be an EcoDistrict. They all had slightly different geographic and other neighbourhood characteristics." (Green Building Manager, 2015) As well, a framework and process (although quite a flexible one) was parachuted into the pilot projects from the top down, where the City and PoSI had their own goals of developing and testing the EcoDistricts Framework and where "[t]he goals felt very external to the organizations they were trying to apply them to and I think there was also a fair amount of black box behind the scenes stuff that didn't get translated to both the meetings or the page, so I think that proved to be, it almost created a distrust in this." (Green Building Manager, 2015) However, as time went on, it became evident that the City expected the local EcoDistricts to take ownership and develop from the bottom up. An architect in Portland who was involved in the early stages of the EcoDistrict concept adds to this discussion:

> "The question has always been about the civic engagement piece of it. It has always felt like a top-down, expert-laden paradigm and I've always been uncomfortable with that because I think real change is going to happen from grassroots activity, and people from the grassroots get a little bit intimidated or hostile to experts who parachute into their community from outside and I'm not saying that EcoDistricts does that. I think that they do a good job of building coalitions, but I'm not sure that they're always digging deep down into the neighbourhoods that they're working in at the very grassroots level; they tend to stay up at the mayor's office and policy level. And I think that's important, but I don't think it's enough." (Architect from SERA, 2015)

The tension between top-down and bottom-up processes is also confirmed in secondary sources. Joss (2015) argues that in the pilot projects, there existed conflicting narratives. He argues, "These two narratives are interesting in that one foregrounds the need for scaling up, from the building level to the neighbourhood, whereas the other puts emphasis on scaling down, from city-wide intervention to consolidation at neighbourhood level." (Joss, 2015, p. 190) This argument is supported by interviews Joss conducted with stakeholders in the pilot project process. In an interview that Joss conducted with someone from the PDC, this interviewee explained, "It is an acknowledgment that the public sector can only do so much… we are very clear as we go on to do EcoDistricts that this is not something that is going to come from the city

down. This is something that has to have property owners, business owners, home owners and renters [on board]" (Joss interview with PDC, October 25th 2010) The PDC and City therefore believed that the EcoDistricts and private sector should take the lead and self-identify their priorities. "This is not a top-down effort… it is a question of "okay we provide you with these targets as EcoDistricts; you tell us what makes the best business sense for you, for this district or this neighbourhood, to go pursue it." (Joss interview with PDC, October 25th 2010) Joss argues that within this new governance context where private-sector interests are privileged, government may actually be putting up regulatory impediments (Joss, 2015).

Joss also takes these findings one step further by arguing that the City is not very necessary for implementing EcoDistrict, and could stand to retreat into the background:

> EcoDistricts offer the promise of delivering projects on an accelerated timeline, and one that is driven by the businesses, residents, and property owners in a district, not by the city… EcoDistricts don't necessarily require a role for the city government, and there is a great deal the private sector can do without the city's involvement. Often, however, city regulations may complicate options, and the city needs to be ready to explore ways to meet the outcomes that regulations are intended to accomplish in ways that may depart from the prescribed pathways. (Anderson in Joss)

This differs somewhat from findings in the interviews in this Ph.D. project, since at least the local EcoDistrict leaders did want more clarity about the City's role, and also wanted certain benefits in return for their pilot project status, mainly in the form of a special designation, and financing. They did, however, also want control over their districts, and for what was going to be developed and how to come from the bottom up and not from the City.

Perhaps the local EcoDistrict leaders and stakeholders wanted to have their cake and eat it too by wanting City financing and special status while maintaining autonomy and control over their own neighbourhoods. In any event, all stakeholders involved in the pilot project process from 2010-2013 would have benefitted from greater clarity about their respective roles and responsibilities. Unfortunately, ambiguous, overlapping, and uneven stakeholder roles in the pilot project process created differing expectations amongst stakeholders – especially the City and local district stakeholders – leading to a conflict between whether EcoDistricts is a concept to be implemented from the top-down or bottom-up. In the absence of conflict resolution

mechanisms, this conflict between the City/PoSI and the local EcoDistrict stakeholders went unresolved. On the other hand, these past sections also demonstrated how the internal attributes of the design teams (or lack thereof) contributed to very different outcomes in the Lloyd District and South Waterfront EcoDistrict. It also highlights the need for clarity and transparency concerning the actions, assets (contributions), and expectations of the different stakeholders involved in the pilot projects (see figure 5.11 at the end of this chapter). These three elements should therefore be considered as conditions for healthy stakeholder relations and for collaboration, the subject of the following section.

5.6. Collaboration between stakeholders in the EcoDistricts pilot projects: what worked and what didn't?

When asked how the EcoDistricts Framework impacted the pilot project process and stakeholders' practice, a second theme that was discussed heavily in interviews was collaboration in a context where implementing EcoDistrict pilot projects is an interactive, communicative activity (Innes & Booher, 2010). Many interviewees spent time describing their experiences, expressing elements that worked well in terms of their relationships with other stakeholders, and also expressing the limitations and challenges for such collaboration. This next section first describes the nature of collaboration in the Lloyd District and South Waterfront EcoDistrict individually (and how this collaboration evolved over time), then describes collaboration between the different pilot projects during the pilot project process in 2010-2013, and then analyzes what worked and what did not work with respect to collaboration in the pilot projects.

5.6.1. How collaboration in the Lloyd District and South Waterfront EcoDistrict evolved in distinct phases

If one thing is very evident from the EcoDistrict pilots, it is that the nature of collaborative efforts evolved and went through different stages. Let's start with the Lloyd District. In the early stages of Lloyd, immediately prior to it signing on to be one of Portland's five pilot projects, collaborative efforts were already taking place between large private developers in the area. As previously mentioned, three levels of government became involved and became co-conveners in

a plan to revitalize the area. However, due to mayor Sam Adam's scandal, collaborative efforts morphed into a type of "shuttle diplomacy," (Director at Oregon Solutions, 2017) where all project actors rarely sat in a room together, challenging the authenticity of the dialogue taking place (Innes & Booher, 2010), and putting strain on the collaborative process. As a result, a project manager and another employee from Oregon Solutions would often work together with PoSI staff and employees from one governing body at a time, bounce off ideas, and then discuss these ideas separately with representatives of the other two governing bodies. Oregon Solutions is a consultancy that specializes in collaborative governance, so for them, this form of shuttle diplomacy was absolutely an anomaly (Director at Oregon Solutions, 2017). The assessment work performed by Oregon Solutions during this phase was targeted at matching the aspirations of the private sector stakeholders (the developers) who wanted to do this, first of all with each other, and secondly with the governing bodies (with the three governors) (Director at Oregon Solutions, 2017). It is important to notice that the economic crisis happened almost simultaneously to the mayor's scandal, and so along with the strain put on the collaborative process by this "shuttle diplomacy," the crisis caused an upheaval of leadership and loss of capacity.

In spite of these external factors, during these early phases, it was easy to build consensus with six big players on board (PDC employee, 2015) because they had a shared purpose (Innes & Booher, 1999a). During this assessment phase, the various stakeholders worked together to look at various sustainability issues (such as water, electricity, transportation, and waste management) and what could easily be achieved on a five or ten-year plan (ibid). The PDC and BPS also hired consultants to do some of the assessment work and help get different stakeholders on board (ibid). During this phase of collaboration between the different stakeholders, there was a lot of excitement and momentum created around the idea of EcoDistricts. Moreover, since several of the different property developers had already been collaborating for some time prior, it was easy for them to come up with a vision and agree on sustainability definitions and goals.

At the same time, this phase of collaboration involved the hiring of an Executive Director at Lloyd starting in 2010, where ten different property owners or managers each put in $10,000 per year for three years to help implement the vision established during the roadmap development phase, increasing the planning team's already solid level of capacity and self-

organization (Innes & Booher, 1999a). During this phase, the Resource Advisory Council negotiated heavy involvement from the PoSI staff to help the Lloyd Executive Director facilitate meetings and "deliver the framework idea" (L. E. Executive Director, 2015). Because the Lloyd District itself was able to raise significant funding, according to the Executive Director of the Lloyd District, the City was compelled to "pony" up and contribute as well, partly in the form of funding a PoSI employee as a co-staffer to meet regularly with Lloyd District stakeholders. PoSI had also contracted the firm Putnam Infrastructure, and so the Lloyd Executive Director, PoSI staff person, and Putnam Infrastructure staff person would meet "on a regular basis to discuss how [they] were going to move ahead the agenda, how [they] were going to move the roadmap forward, and the planning process." (L. E. Executive Director, 2015) Under the strong leadership of the new Executive Director, the Resource Advisory Council challenged the status quo (Innes & Booher, 1999a) and changed its status to a Board of Directors, formed an Executive Committee, and soon realized that they needed to establish a separate non-profit status that would still be beholden to the Business Improvement District. During this phase, the Board and Executive Director established their baseline conditions and their goals for the next 25 years (L. E. Executive Director, 2015). The Lloyd Executive Director recalls, "We essentially staffed that planning process for the first year. And it was a very collaborative effort of us working together as a small team and leading that on a monthly basis." When by late 2012 the responsibility of running the pilot projects was transferred from PoSI to the City (PDC and BPS), the Lloyd District was already in a good position to run on its own. The Lloyd team therefore exhibited all of Innes & Booher's process criteria for consensus-building and collaborative rationality.

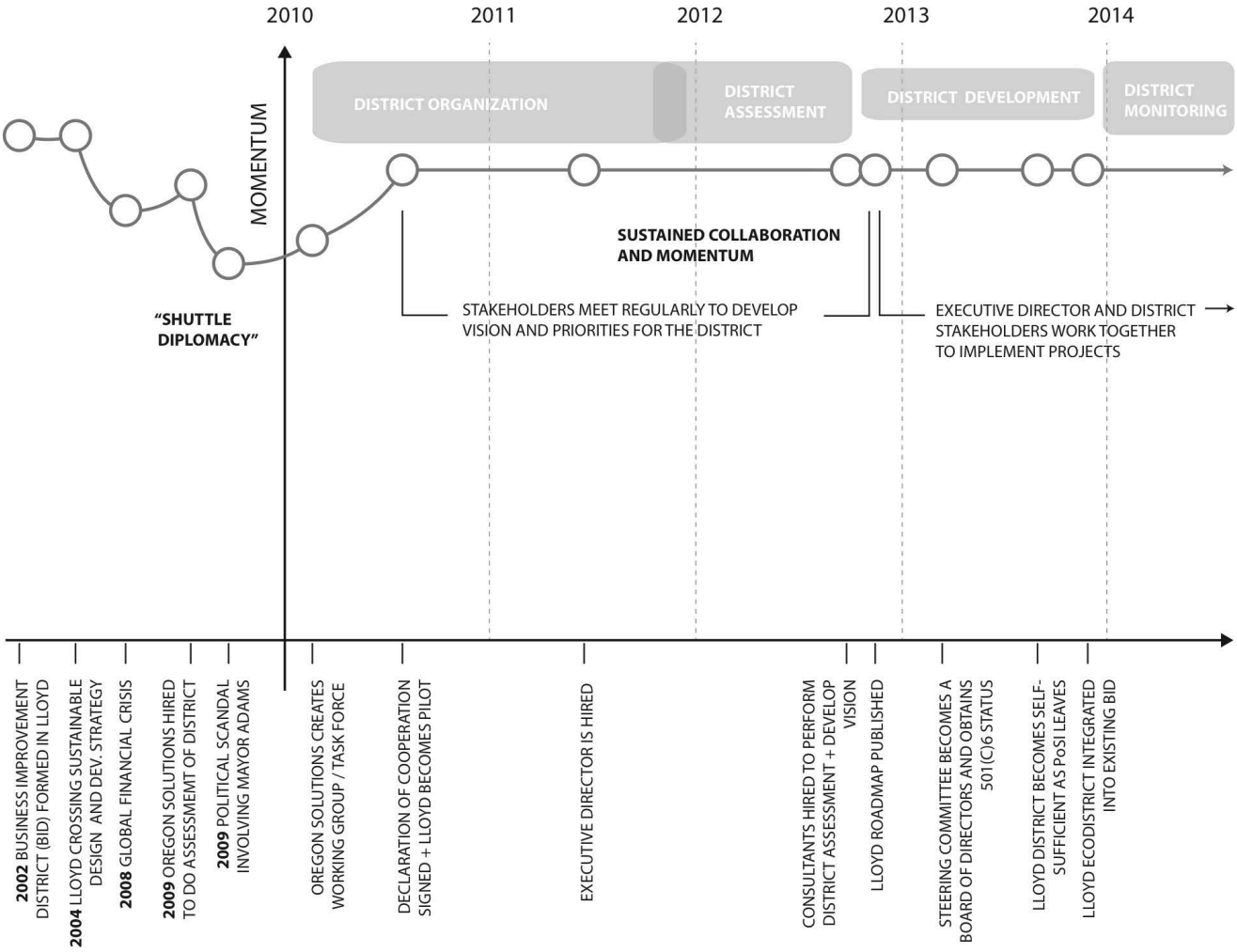


Figure 5.9: Evolution of collaboration in Lloyd with sustained momentum. Source: author. The x-axis shows key events in the pilot project that either positively or negatively affect momentum (as they relate to four key phases in the process). The y axis represents the level of momentum, from low to high.

However, at the same time, the Lloyd team also exhibited attributes that expand on the criteria elaborated by Innes & Booher (1999; 2010); criteria that helped the team overcome obstacles in the design process. Figure 5.9. summarizes the Lloyd EcoDistrict planning team's momentum over time. In its beginnings, the external inhibiting factors of the mayor's scandal and economic crisis cause a disruption and momentary decrease in momentum, the group re-organizes and recovers from these obstacles (in spite of the stakeholder challenges described in section 5.5), demonstrating its resilience. It maintains momentum over the long-term due to in-built capacity, strong leadership, and belief in the collaborative process, and in spite of PoSI handing over ecodistrict-related activities to the City bureaus after a change of leadership in late 2012, the Lloyd EcoDistrict still maintains momentum and is able to "fly solo."

Meanwhile, a different process of collaboration was developing at the South Waterfront EcoDistrict. Like in Lloyd, though, the nature of collaboration also evolved over time and went through different phases. And similar to Lloyd, the South Waterfront EcoDistrict was also built on partnerships and sustainability initiatives that were pre-existing. As described in the previous section, PoSI and the City had approached South Waterfront several times inviting them to become a pilot EcoDistrict, but the four-person non-profit and TMA known as South Waterfront Community Relations (SWCR Executive Director) tried turning down the offer several times, because they did not see the point or the incentive of becoming an EcoDistrict, and did not believe strongly in the process. They thus did not share the same purpose (Innes & Booher, 1999a). After they finally acquiesced and signed on to become a pilot EcoDistrict, the South Waterfront stakeholders signed a Memorandum of Understanding with the City and PoSI staff before the City Council. This was a sort of loose framework that was not a legal framework, but that outlined the responsibilities and commitments of each of the stakeholders. After this, a Steering Committee was formed that was made up of residents, property owners in a central area of the district, Oregon Health & Sciences University (OHSU), and Zidell Realty. After this, the districts formation and assessment phases began. During these phases in late 2011, PoSI and SWCR worked together to convene two workshops. They brought together a number of district stakeholders, including residents, to do a "big matrix exercise" that aimed at determining the needs of the district (SWCR Executive Director, 2015), as well as define a vision, adopt goals, and identify project priorities (EcoDistricts, 2015). This exercise also aimed at what key performance areas the district could put its energy into. According to the SWCR Executive Director, "It was a useful exercise." A consultant was then hired to do an in-depth assessment of project opportunities for South Waterfront, and as a result of this process, several project priorities were identified (ibid). During this phase, the South Waterfront EcoDistrict was also accepted to be one of the 18 cities worldwide to commit to the C40 Climate Positive City Framework, a partnership that is currently on hold.

Over the next couple of years, the steering committee met every quarter, and staff from the City's BPS came to most meetings. However, the Executive Director of SWCR explains that "things weren't progressing because [they] did not have the means to structure the problem," in

other words they lacked capacity, and as a result, “things just fizzled out.” He adds that through early meetings with the steering committee, initially there was a higher bar that was set, but it gradually got lower, and the “low-hanging fruit stuff” was not enough to sustain the group’s momentum (ibid). Moreover, as described in section 5.3.3., the Steering Committee was essentially the same as SWCR’s board, so many members did not see the point of meeting again to discuss EcoDistrict-related projects that were not gaining traction anyway. This, combined with the SWCR Executive Director’s self-proclaimed “weak leadership,” contributed to the South Waterfront Steering Committee disbanding in 2013 and all “ecodistrict” related activities were transferred under the responsibility of the City’s BPS and PDC. The South Waterfront ecodistrict team was therefore not capable of self-organization or challenging the status quo (Innes & Booher, 1999a) because of its lack of capacity.

Figure 5.10 illustrates how momentum changed over time in the South Waterfront ecodistrict pilot. Like in the case of the Lloyd EcoDistrict, the economic crisis and mayor’s scandal contributed to a decrease in momentum on the part of the planning team. Momentum then increases in the district organization phase, as much excitement is generated by PoSI concerning the ecodistrict concept and its potential. However, due to a lack of capacity in the terms of staff time and funding, weak and hesitant leadership, and lack of belief in the collaborative ecodistrict process, the momentum decreases until the steering committee disbands and all ecodistrict-related efforts are abandoned. Table 5.1 then summarizes the process attributes of the Lloyd EcoDistrict and South Waterfront EcoDistrict planning teams, as defined by Innes & Booher and as uncovered in the semi-structured interviews. Those attributes discovered in this case study are indicated in grey, whereas the other ones are in white. Figure 5.11 compares how momentum changes over time in Lloyd and South Waterfront EcoDistricts.

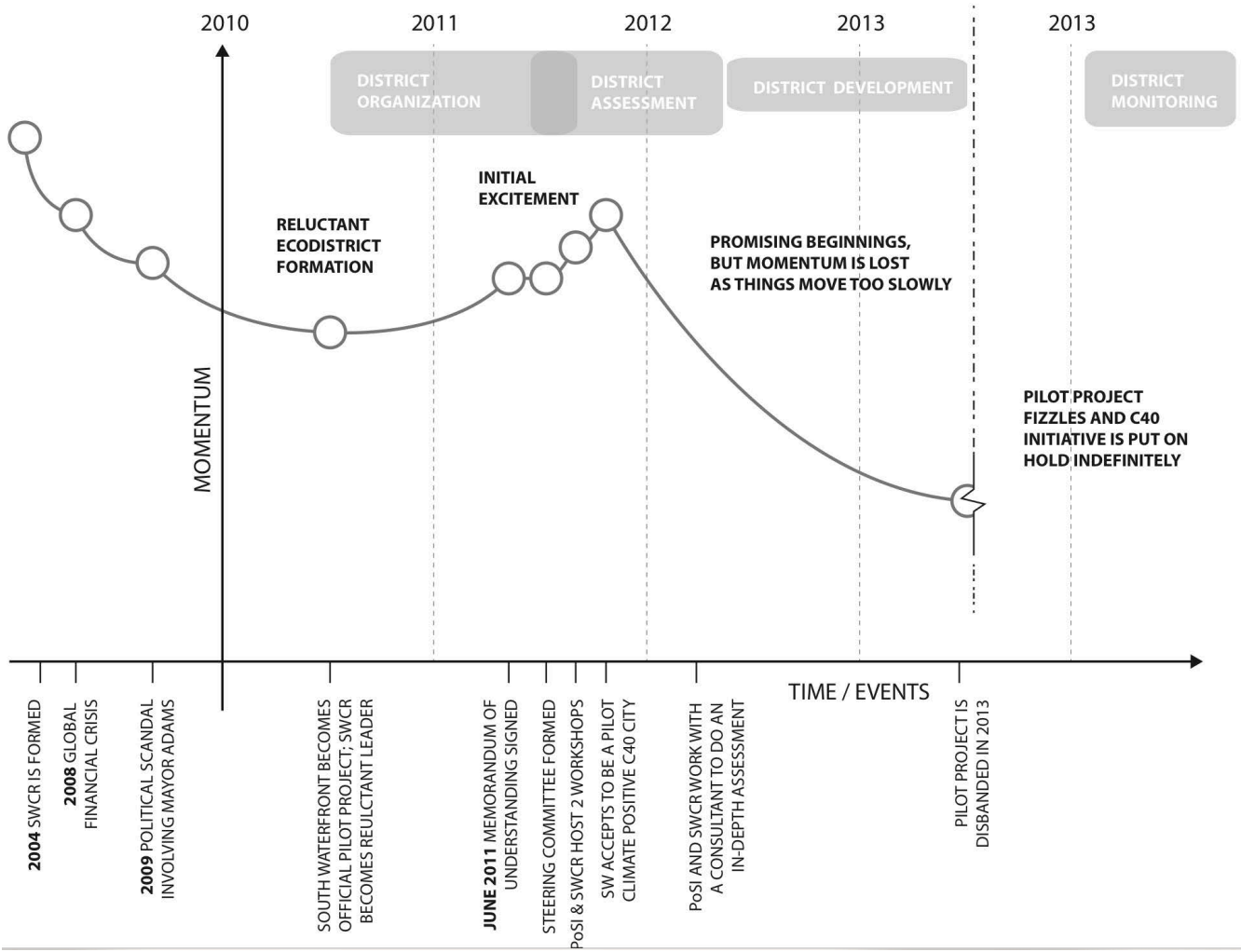


Figure 5.10.: Collaboration in South Waterfront EcoDistrict with momentum decreasing over time. Source: author. The x-axis shows key events in the pilot project that either positively or negatively affect momentum (as they relate to four key phases in the process). The y axis represents the level of momentum, from low to high.

Table 5.1.: Collaboration in South Waterfront EcoDistrict with momentum decreasing over time. Source: author.

Process attributes	Source	Lloyd EcoDistrict	South Waterfront EcoDistrict
Diversity of interests	(Innes & Booher, 1999, 2010)	√	√
Interdependence of interests	(Innes & Booher, 1999, 2010)	√	
Authentic dialogue	(Innes & Booher, 1999, 2010)	√	√
Shared purpose	(Innes & Booher, 1999)	√	
Challenge the status quo	(Innes & Booher, 1999)	√	
Self-organization	(Innes & Booher, 1999)	√	
In-built capacity	(Oliver & Pearl, 2018a)	√	
Leadership	(Oliver & Pearl, 2018a)	√	
Belief in the process	(Oliver & Pearl, 2018a)	√	

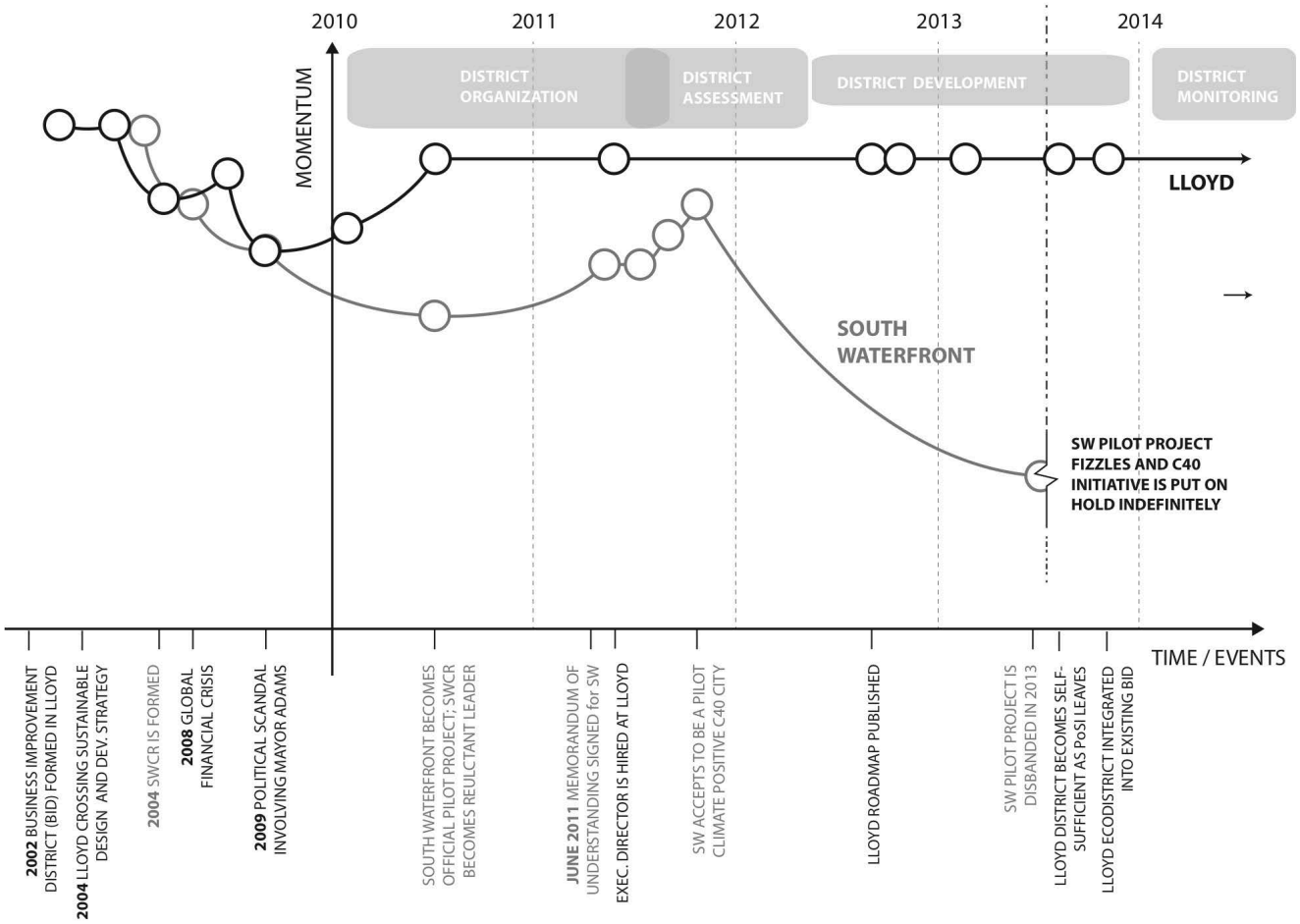


Figure 5.11: Comparative diagram of momentum over time in Lloyd and SW. Source: author.

5.6.2. What worked in terms of collaboration

Interviewees pointed to several positive aspects in terms of collaborative governance in the pilot project process. First of all, an employee from the PDC described the excitement and reception that many district stakeholders had around the EcoDistrict concept. She explains, "There's a lot of value in the framework of EcoDistricts for organizing the value and interest of a particular neighbourhood." (Employee, PDC) Perhaps because in both EcoDistricts, the different stakeholders had already collaborated in the past, it was not difficult for them to agree on project goals. Indeed, there was a high degree of cohesiveness in the pilot project steering committees, and this was seen as a positive for several interviewees. One interviewee notes, "One of the big lessons learned from the EcoDistricts is that we went in, did this whole community organizing process, did a big comprehensive assessment with lots of data, and in the end, the community

was like “We know what we want, we know what we want to do. Why didn’t you just ask us that first? And we could start with that.” (Program Director, 2015) Very similarly, another interviewee explained, “I think that the pilots had their own sense of what they needed and they probably could have skipped the Assessment phase all together and come back to that. If you had sat in a room with any of those EcoDistricts and said “What are the three most important things right now in your community?” They could have rattled that off quite quickly.” (Green Building Manager, 2015) In the Lloyd District, collaboration also yielded firm results. The Lloyd Executive Director rallied together several big players in the district to gather support for a LED-retrofitting program that would save them lots of money in operating costs, as well as provide environmental benefits. The Lloyd District partnered with the Building Operators Management Association in Portland to launch this program, and within just a couple of years, several property managers were able to reduce their energy use by 10% (Employee, PDC). With respect to this last point, a PoSI pilot evaluation report notes that “building off of an existing organizational structure, relationships, trust, and capacity can lead to advanced outcomes.” (EcoDistricts, 2015)

5.6.3. Collaboration barriers and challenges

While a Memorandum of Understanding was signed and partnerships were cemented in both Lloyd and South Waterfront EcoDistricts, this does not necessarily mean that collaboration went smoothly. In fact, interviewees surfaced many barriers and challenges to meaningful collaboration, which are described below:

- *Personalities, and in particular, egos:* Egos and different personalities invariably influenced collaborative governance in the pilot projects on occasion. For instance, an interviewee mentioned the challenge of having different stakeholders or co-conveners collaborate if they were rivals of sorts, because these egos affected the process in a negative way.
- *Who the project conveners are:* Several of PoSI’s documents on forming EcoDistricts mention the importance of getting the “right people” at the table. This can be interpreted in many ways (whether they are larger or smaller stakeholders, whether they are from the private or public sectors, whether they have assets to invest, etc). One such example

is the level of government and its influence on keeping the project moving forward. An interviewee from the Lloyd District pilot project notes, “We tried to have conveners at a pretty high level who can bring people to the table, but sometimes we found from projects that conveners can be at too high a level so that basically not much happens.”

- *Time constraints:* Building ecodistricts can take a long time, and a few interviewees mentioned the frustration of ‘not a lot happening’ in spite of years of collaborative governance. In other words, there was not a lot of physical change in the districts, in spite of years of organizing and team-building work. One interviewee explains, “Other than creating partnerships, [the EcoDistricts] haven’t been able to do much beyond that…. You know, things are slow-moving. Three years is not a lot of time.”
- *Getting stakeholders to think outside the box:* In a collaborative governance project, it is sometimes difficult for stakeholders to think synergistically and beyond their own siloes and areas of expertise. It was therefore at time a challenge to get district stakeholders to think outside the box in new, innovative ways.
- *Balancing different stakeholder needs and expectations:* Unsurprisingly, in a project with a diverse set of stakeholders and stakeholder interests, it is a challenge to balance their needs and expectations. One such example was the challenge of balancing the different pilots’ want for “early wins” and tangible outcomes with also taking the time to figure out what they wanted to do and who they wanted to be (Program Officer from PoSI, 2016).
- *Lacking a project anchor or ‘mechanism’:* A few interviewees emphasized the fact that collaboration is either pointless or meaningless in the absence of a mechanism to anchor the EcoDistricts in place. Interviewees specifically spoke about either Local Improvement Districts or Business Improvement Districts or non-profit status as mechanisms that help translate visions and goals into realities.

5.6.4 Summary of collaboration in the pilot projects

This last section showed how applying the EcoDistricts Framework affected collaboration in the pilot project process – a theme that was discussed heavily in interviews with project stakeholders. It explained how certain external pressures put strain on the collaborative efforts

of the ecodistrict pilots and affected their ability to sustain momentum over time. Because the Lloyd EcoDistrict planning team had a high level of in-built capacity, strong leadership, and believed strongly in the merits of the collaborative process (as well as all the criteria for collaborative rationality), it was able to recover from these external pressures, reorganize, and then sustain momentum over time. South Waterfront, on the other hand, demonstrated a clear lack of these attributes, and was unable to recover fully from the external pressures. Momentum for the ecodistrict-related objectives was therefore lost. Collaboration evolved through different stages in the pilot projects and took on very different forms in South Waterfront versus Lloyd District. What seemed to work best in the pilots in terms of collaboration was the cohesiveness of the stakeholder groups, where it was easy to develop a vision for the EcoDistricts and prioritize projects to implement. Several barriers and challenges for collaboration were identified by interviewees, however, and were described in the previous section.

In the end, it becomes important to understand the role of resilience in relation to collaboration. It is not enough to simply have the conditions for strong collaboration or consensus-building to guarantee success; planning teams also need resilience characteristics to help them overcome inevitable external and internal obstacles during the planning process.

5.7 Limits of the EcoDistricts Framework

A unique district-scale governance framework that brings together stakeholders from local and regional governments, the private sector, the non-profit sector, and communities around sustainability issues, the EcoDistricts Framework in its pilot version was nevertheless limited in its ability to create transformational change in the five pilot projects. Besides one interviewee who defended the position that "[t]here's nothing to it. It's Urban Planning 101. Go to the community, get the stakeholders, come up with the projects, measure the projects, and then evaluate the projects" (anonymous interviewee), other interviewees offered up insights about the limits of the EcoDistricts Framework 1.0:

- The Framework does not guarantee that people "understand the same language" (PDC employee, 2015); according to one interviewee, it was not clear what PoSI meant by "governance" and what the framework was in the early days: "The framework was

kind of just what are the policies, what is the outline? How can you explain this to people? What are your foundations? And I think that was the hardest thing for people to kind of get and understand." (ibid)

- The framework did not incorporate creating a 'mechanism' to help the EcoDistrict live on after the official pilot process (Architect from SERA, 2015; SWCR Executive Director, 2015). Interviewees expressed the need for a Business Improvement District (BID), Local Improvement District (LID), zoning designation, or non-profit organization to help the local neighbourhood govern the district over the long-term;
- The partnership-building exercise does not guarantee a "centre of gravity" for the project: "more stuff is going to happen if there's some impulse or something that you can leverage or something that people can either unify for or against, and so that's what the missing ingredient is in most EcoDistricts" (Architect from ZGF Architects, 2015);
- It does not necessarily clarify the roles and responsibilities of each stakeholder group (Program Officer from PoSI, 2016), nor does it set in place conflict resolution mechanisms in the event that unclear roles and responsibilities lead to conflict;
- It creates "a whole bunch of procedures and process" without creating obvious rewards or benefits for local stakeholders (SWCR Executive Director, 2015);
- It does not ensure that planning teams have the required capacity to overcome roadblocks in the pilot project process;

Finally, and perhaps most importantly, is the tension between top-down and bottom-up. The EcoDistricts Framework does a solid job of convening different types of stakeholders to create meaningful partnerships; however, the civic engagement component is arguably inadequate. As an architect from SERA in Portland argues, "The top down approach just does not seem viable when you are talking about viable, resilient, biophilic communities. You really need to make the users be invested in the game. And a lot of times, you will find some real genius from people who really know their place and don't have the "right tool," as opposed to one tool size fitting everything." (Architect from SERA, 2015) Related to this last point, the EcoDistricts Framework does not necessarily require building bridges and relationships with stakeholders in surrounding

neighbourhoods (see the concept of 'blurring boundaries' in **Chapter 2: Literature Review**). Given these limits, to what extent does the EcoDistricts Framework and its implementation in the Lloyd and South Waterfront EcoDistrict pilots help us move towards a more regenerative, resilient paradigm?

5.8 Shifting paradigms: a focus on procedural justice

In terms of its embedded agenda and philosophy, the pilot version of the EcoDistricts Framework and conception of an 'eco-district' aims at greater efficiency, equity, and sustainability, but does not go so far as to propose a sea change in the built environment as would be suggested by the Living Community Challenge or the superblock proposal in Barcelona (see **Chapter 7**). In terms of its vision for the built environment, it does not go so far as to integrate the key aims of regenerative sustainability and resilience to disasters. Moreover, the types of projects that were realized during the pilot project (such as a large-scale LED lighting retrofit program in Lloyd) are evidence of a more incremental approach to sustainability than a sea change or paradigm shift. Resilience to disasters and adaptation to climate change in the 2010-2013 pilot projects were also not at the forefront, as was made evident both by EcoDistricts documentation and interviews with stakeholders.

But what about the planning process? Where the EcoDistricts concept is making some advances in the transition towards a regenerative paradigm for the built environment is in its vision for an inclusive and collaborative process in order to enhance social justice and procedural justice. It is innovative in the way that it helps bring together stakeholders from different sectors (private developers, municipal government, local communities, non-profit sector, businesses, etc.) and disciplines to partner together and co-create a better future and for its recognition that fundamental change will not happen solely through the use of baselines and targets, but also through just processes. Prioritizing a just and participatory process and employing collaborative and interdisciplinary planning practices are thus areas that show progress and a move away from the traditional technical-rational model. While the partnership aspect is strong in the EcoDistricts case, it does not necessarily involve a diverse range of stakeholders, however, or stakeholders that are hard to reach. Rather, the EcoDisitricts Organization toolkit (Portland Sustainability

Institute) emphasizes that "given realistic time constraints you might have to focus on representative groups, recognizing that you can't talk to all the thousands of neighbors in a residential district." (p. 6)

Pilot projects are designed to be testing grounds or laboratories of sorts, so that cities can learn from the processes and outcomes and adapt their responses accordingly. A new regenerative, resilient paradigm involves reflexive and collective 'double-loop' learning. The fact that there were five pilot projects offered a key opportunity for the different pilots to learn from each other, but as an architect from the City of Portland explained, it was rare that the different pilots really took advantage of this opportunity to learn and adapt.[19] This explicit will to learn from each other and adapt responses was not evident in the EcoDistricts pilot projects. Moreover, at the PoSI and City level, beyond the final pilot project evaluation, which was completed in 2015, the pilot projects seem to have been forgotten and even abandoned. The results of the five pilot projects are not widely published on City websites or the EcoDistricts website for that matter, except for a short case study on Lloyd, since it is considered the only success story of the five pilot projects. Should it not also be important to publish information about the obstacles encountered and the failures in the pilot project process? Should it not be important to explain how projects live on once the experts leave, since a neighbourhood is never a 'finished product'? And does the EcoDistrict framework live on in the community, for instance by shaping operations, design guidelines, and so forth? The various City of Portland departments and EcoDistricts seem to have abandoned the pilot projects once their final pilot project evaluations were complete.

Spreading the lessons learned from both the successes and the failures of the framework-building and testing process could be useful not only for Portland to learn and grow, but also for other cities. On the other hand, PoSI did evolve the EcoDistrict Framework into the EcoDistricts Protocol, presumably based on experiences from the pilot projects so there may have been some

[19] This can be contrasted, for example, with the *ruelles vertes* (green alleys) program in the Rosemont borough of Montreal, where the *Grand CRU* group periodically brings together all of the different green alley projects, which are run individually, so that they can compare results and learn from each other and evolve – a good example of double-loop learning.

adaptive and collective learning happing within PoSI. This learning just was not scaled up to the level of the different pilot projects or even state or national levels.

Other areas where the EcoDistricts framework and process seem stuck in the technical-rational paradigm, rather than the regenerative, resilient paradigm are blurring spatial boundaries and building capacity. The planning teams were quite focused on integrating sustainable strategies within their district, rather than focusing on what the district could bring to surrounding communities. And lastly, the framework itself did not adequately focus on building capacities in the local EcoDistrict stakeholder groups. Building capacity in stakeholder groups is extremely important in regenerative projects because it allows stakeholders to have projects live on once the architects and planners are finished their work on the project. Several interviewees in the EcoDistricts case study mentioned the need for a "mechanism" to allow the momentum to carry forward once PoSi retreats from supporting the EcoDistricts. Building capacity and helping local community groups develop a form of long-term governance (and not just a partnership to help launch a project in the short-term) should be an essential component of the EcoDistricts framework and process.

A few authors (Cash et al., 2006; Waddick, 2014) have also referred to PoSI as a "bridging organization" that helps in this transition by playing an intermediary role between different arenas, levels or scales. While the EcoDistrict model embraces a multi-actor, collaborative approach, and is committed to the difference that creating these new configurations of actors will make to outcomes in eco-districts, it has arguably not resolved or fully worked out this position (Holden et al., 2016).

To summarize, the aspired outcomes of EcoDistricts were fairly technically-oriented instead of place-based and regenerative. From a process standpoint, EcoDistricts could still evolve to help build capacity and embrace adaptive and collective learning. On the other hand, the collaborative partnership model, the prioritizing of process over performance, and the interdisciplinary and participative aspects of the framework are aligned with the regenerative, resilient paradigm for the built environment. Thus, in some respects, the EcoDistrcts framework seems to be indicative of a "transition" between the old and the new paradigm.

5.9 Theoretical and practical implications of the case study

The lessons extracted from the comparative case study analysis of Lloyd and South Waterfront reveal important lessons for collaborative planning. While the ingredients for collaborative planning may be present – diversity of interests, interdependence of interests, and authentic dialogue (Innes & Booher, 2010) – these conditions do not necessarily guarantee the success of a collaborative process or its resilience to pressures, obstacles, and shocks. The case study analysis suggests that an understanding of collaborative planning should be expanded to include other internal attributes necessary for a planning team to overcome challenges: in-built capacity, strong leadership, and belief in the process. In this way, the research suggests that the concept of resilience be incorporated into the literature on collaborative planning and existing models such as the collaborative rationality model. But it is not just the resilience of the built environment that is of concern here; it is the resilience of the planning team and the resilience of the planning process that is necessary for successful implementation of complex, ambitious projects such as ecodistricts.

Building on this last point, the case study results point to the need to expand our theoretical knowledge of the resilience of planning processes and planning teams involved these processes. As well as expanding knowledge in this area, it will also be important to develop pertinent language to describe resilience in collaborative planning. In **Chapter 3 Theoretical Framework** of this dissertation, the difference between a product-based and a process-based approach to understanding sustainability frameworks was described, and within this section, the notion of "procedural sustainability" proposed by Robinson and colleagues (Robinson, 2003, 2004; Robinson et al., 2006; Robinson, Burch, Talwar, O'Shea, & Walsh, 2011; Robinson & Tansey, 2006; Robinson & Cole, 2015). This case study research brings to light the need to discuss "procedural resilience," which would signify both that resilience is a process and not just an outcome, a process that necessitates collaboration and co-learning to define future options. At the same time, it would signify the resilience of the process employed, itself. The integration of "procedural resilience" could thus help support the process of building ecodistricts.

Practical implications of these findings might involve concentrating on capacity from day

one and planning for ways to increase capacity. This could perhaps happen in parallel to the districts formation and assessment phase in the protocol. If this does not happen, it is very disappointing for stakeholders to build a common vision and get ramped up only to feel abandoned and without support to implement projects. Another practical implication is that the EcoDistricts Protocol could build in leadership criteria. It is important to have a champion who can generate enthusiasm and help sustain momentum in a project, and preferably, there should not be too much change in leadership; a green champion who is invested for the medium-term or long-term should greatly help the pilot project process. More research, however, needs to be conducted on neighbourhood sustainability frameworks and the experiences stakeholders have using them.

5.10 Conclusion

Eco-districts require the collaboration of many different actors from the private, public, and non-profit sectors. The EcoDistricts Framework 1.0 was introduced in its pilot version in 2010-2012 to be tested in five pilot projects and subsequently adapted according to lessons learned. By relying on semi-structured interviews with key stakeholders involved in Portland's EcoDistrict pilot program, it was possible to gain some insight on ways in which the EcoDistricts Framework impacted the process, although these insights were rather subtle since most interviewees did not distinguish between the EcoDistricts Framework in particular and the planning process in general. Nevertheless, the whole organization phase of the EcoDistricts Framework led to partnership formations in the two pilot projects, as well as signing Memoranda of Understanding and forming an EcoDistricts committee, the planning team. This generated a lot of initial excitement in the two planning teams as they performed internal assessments and defined their ecodistrict-related goals. However, this phase also suffered from a lack of clarity in defining stakeholder roles and responsibilities, which muddied stakeholder relations, as is described in this chapter, as stakeholders had very divergent *expectations*. Moreover, external inhibiting factors put pressure on the pilot project process and created gaps between the expectations and reality of how the framework was implemented. Applying the framework also required a lot of collaboration in the form of meetings and charrettes in the different planning

teams, yet one team maintained momentum while the other team completely lost momentum. Finally, after the District Implementation phase, the pilot projects described PoSI's handholding as abruptly stopping and them having the rug pulled out from under them. Thus, one could summarize that the EcoDistricts Framework in its very first version and very first test cases generated initial excitement, but also generated uncertainty and ambiguity over what it means to be an ecodistrict and what the City's and local ecodistrict actors' roles and responsibilities should be in carrying the ecodistrict concept forward.

This chapter also elaborated on some very valuable lessons learned from the case study, concerning the reasons that Lloyd succeeded as a pilot project, with the South Waterfront disbanded in 2013. Analysis of the semi-structured interviews and various primary and secondary source documents allowed for uncovering some key external factors that put pressure on the planning process and the internal factors or attributes that the Lloyd EcoDistrict planning team possessed, which allowed them to recover from the external pressures, and which the South Waterfront EcoDistrict planning team did not possess. These external and internal factors were discussed in relation to the two themes of stakeholder relations and collaboration. These discussions set the ground for suggesting the need for new knowledge on "procedural resilience" and for the integration of the concept of resilience in the collaborative planning literature.

Figure 5.12 presents an analytical framework for the EcoDistricts case study, building on Innes & Booher's collaborative rationality model and Raynaud's stakeholder model. On the left-hand side, external factors that influence the pilot project process are presented, which put pressure on the process. Additionally, three conditions (from section 5.4. on stakeholder roles and responsibilities) are added to the conditions for collaborative rationality: clear actions, clear assets, and clear and aligned expectations. Finally, the three internal enabling factors (procedural resilience attributes) of in-built capacity, strong leadership, and belief in the process are added in order for the process to reach the aspired benefits described in Innes & Booher's model. The figures and text in red represent new contributions to the literature on collaborative planning.

While external factors such as the political scandal, change in leadership, and economic crisis circa 2008-2009 could not be controlled or taken account for in the pilot projects, other contributing factors are more within reach that help sustain momentum and carry the

EcoDistricts concept forward. Contrary to much of the literature on ecodistricts and collaborative governance, it is not enough to simply have the right players at the table and for them to willingly engage in a partnership. It is vital that their commitments, assets, actions, and expectations be crystal clear to all other parties involved. It is also vital that stakeholder groups have built-in capacity (including staff and resources), strong leadership, and that they truly believe in the project goals and collaborative goals if they are to overcome roadblocks in the design process. It is hard to sustain momentum in a complex project, when stakeholders are doubtful of the goals and process in the first place. Stakeholders should be "won over" and share a joint sense of enthusiasm in the project in order to be able to withstand the challenges along the way. These internal attributes thus enhance the planning team's resilience: their ability to recover from the obstacles they encounter throughout the process.

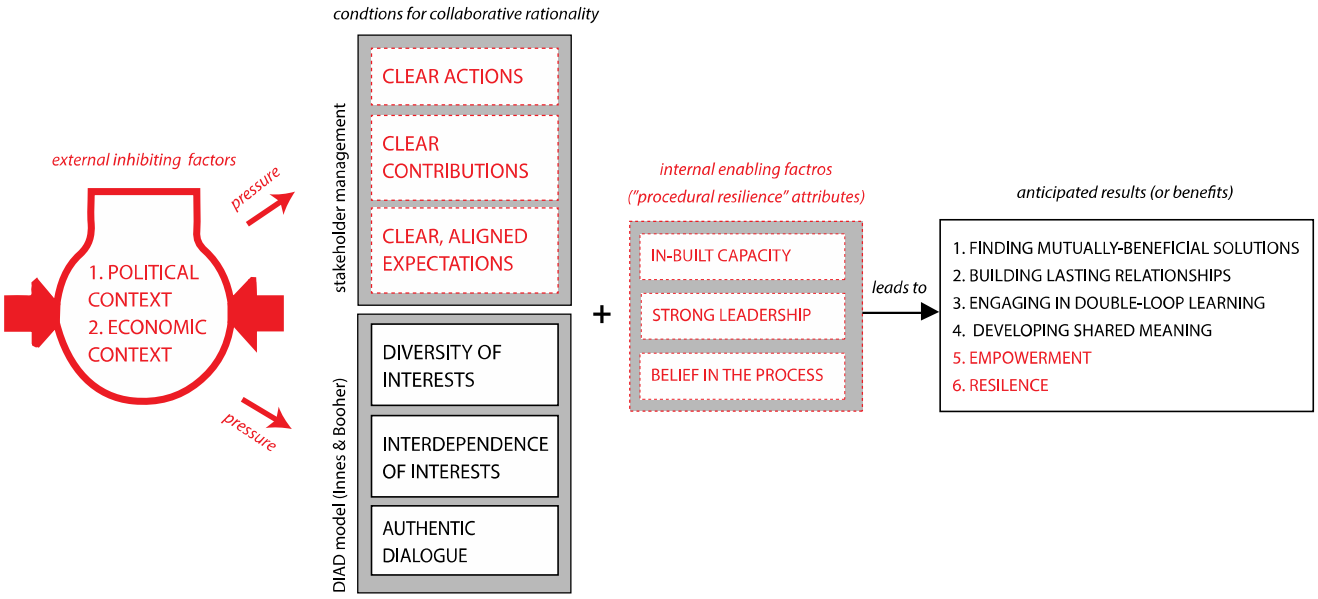


Figure 5.12: Analytical framework for effective collaborative governance in ecodistricts, based on interviews with EcoDistricts pilot project stakeholders and documents analysis. Inspired by Innes & Booher's collaborative rationality model and Raynaud's stakeholder model. Source: author. In the centre, the presence of the conditions for collaborative rationality and internal enabling factors leads to the anticipated results. The black arrow represents this causal link. However, political and economic context puts pressure on this set of relationships (red arrows).

CHAPTER 6

The BREEAM-Communities pilot project in Malmö, Sweden

This chapter presents the BREEAM Communities (BREEAM-C) – a third party certification system based out of the UK -- pilot project in Malmö, Sweden, known as the Masthusen project. The Masthusen project was a project led by a large Swedish developer called Diligentia and involved the planning team creating a bespoke technical manual for the BREEAM-Communities certification process. Interviewees with key stakeholders involved in implementing the BREEAM-C framework spoke largely about the extra work that this framework created, which manifested itself in heightened collaboration (positive consequence), a mandatory community consultation component (negative consequence) and innovation in new forms of visual communication tools (positive consequence).

Chapter 6: The BREEAM-Communities pilot project in Malmö, Sweden

6.0 Overview of this chapter

This chapter presents the BREEAM Communities (BREEAM-C) – a third party certification system based out of the UK -- pilot project in Malmö, Sweden, known as the Masthusen project and goes to the heart of the debate between process and product presented in the earlier chapters of this dissertation. Malmö is the second largest city in Sweden and is known globally for its achievements in sustainability; the urban planning department in Malmö is very progressive in terms of advancing climate change planning and also in terms of collaborative planning. For example, Malmö has participated in two of six pilot experiments with a Swedish-developed collaborative planning process that involves dialogue and meetings between private developers, construction managers, and urban planners quite early on in the planning process. The Masthusen project was a project led by a large Swedish developer called Diligentia on a 10-hectare brownfield site (once renowned for shipyards and car manufacturing) in Malmö's Western Harbour neighbourhood. The eco-district project involved developing 18 city blocks into 1350 new dwelling units and 52,000m2 of commercial and institutional space. It was conceived of as a "multi-functional hub" by linking other parts of the Western Harbour by creating connections and meeting spaces. It was designed with active ground-floors, a series of interconnected public spaces, high urban density, and access to active modes of transportation. The pilot project involved the planning team creating a bespoke technical manual for the BREEAM-Communities certification process. Diligentia had sought certification for the sustainable community it had been planning for several years, but because it was introduced so late in the planning process, it had little impact on the master plan. As will be demonstrated in this chapter, its impacts can be seen more in terms of the detailed plans and the planning process itself.

Interviews with key members of the planning team (please refer to Table 4.8 in **Chapter 4**) concerning the application of the BREEAM-C framework in the project and its integration into the larger planning process revealed both positive and negative ways that BREEAM-C affected

the pilot project. Interviewees focused on the extra work for the design team that the framework required. This extra work came in the form of heightened collaboration and earlier on than is normally the case (which was considered as positive by the interviewees), a prescriptive community consultation process (considered a negative by the interviewees), and innovation in problem-solving techniques on the part of the planning team, which emerged in the form of new visual communication tools (considered a positive by interviewees). Indeed, the BREEAM-Communities Framework very much drove the planning process for a good part, but certain factors (external, internal; inhibiting, and enabling) and certain tensions also had an influence.

In terms of these three themes that emerged from interviews – collaboration, community consultation, and communication – this chapter asks, what were the factors that influenced how these played out? For instance, in terms of collaboration, the Masthusen project is a model of success. But what factors led to this success? In terms of community consultation – a mandatory requirement of the BREEAM Communities framework – who was the community, and what decision-making power did it have? How successful was community consultation, i.e. did it fulfil its aims? How did it impact the planning team? And finally, concerning the planning team's working methods, how did it communicate and distil complex information throughout the pilot project process? This chapter explores the ways in which the Masthusen planning team creatively problem-solved together in order to work through the 398-page BREEAM-C technical manual, but also the challenges and frustrations the planning team encountered along the way. Then, zooming back out to the bigger picture, the chapter concludes by asking, what benefits did the BREEAM Communities framework bring to the planning process? What can be learned from this pilot project?

6.1 The BREEAM-Communities tool and how it was 'framed'

This chapter describes the application of the BREEAM-Communities framework – a neighbourhood-scale certification system -- to a sustainable neighbourhood in Malmö's Western Harbour area. While the City of Malmö already set very ambitious sustainability and climate change planning targets for urban development, especially in the Western Harbour neighbourhood, the developer of the Masthusen project, Diligentia, wanted to have its sustainable master plan certified in order to receive some sort of official recognition for their

achievements. Diligentia therefore opted for UK-based sustainable neighbourhood certification framework called BREEAM Communities (BREEAM-C), since Sweden had not adopted an official certification system of its own. Masthusen is the first BREEAM Communities certified project in Scandinavia, and one of the first certified projects globally.

BREEAM-C was created by BRE Global, an independent third-party approvals body, in 2008 as a natural evolution of its building assessment tool. It is intended to help a design team consider sustainability issues in the early design phases of a neighbourhood development (BREEAM Communities, 2009) and is used to evaluate large (neighbourhood-scale) developments.[20] The first version of BREEAM-C divided the assessment into several themes, including governance, social and economic well-being, resources and energy, land use and ecology, and transport and movement (BREEAM Communities, 2009). Each theme was broken down into several performance criteria than can be worth up to three credits with a regional weighting. At the end of the assessment process, a score out of 100 is awarded. This earlier version of BREEAM-C divided the master planning process into two compulsory stages: the outline planning stage and the detailed planning stage (refer to figure 6.1).

Agendas and aspirations behind the BREEAM-Communities Framework

Promotional materials on the BREEAM-C framework are sometimes explicit and sometimes implicit about its agendas and aspirations, which are both to ameliorate planning *processes* and sustainability outcomes. It therefore sets itself apart from first generation NSA frameworks by blending both 'product' and 'process.' Its principle objective is to help neighbourhoods achieve 'sustainable development,' which BRE defines broadly in terms of environment, economy, and society (Callway et al., 2016). However, the technical dimension of urban design and form and a governance dimension are increasingly being taken into consideration. More specifically, BREEAM-C aims to increase the sustainability of neighbourhood

[20] For North American readers who might wonder what the difference is between BREEAM-C and LEED ND, they are both neighbourhood certification systems administered by third-party organizations. There are some important differences, however. BREEAM-C (at the time of the pilot projects in this dissertation) certified master plans but not completed projects. It also aims to influence the planning process and mandates community consultation. LEED ND, on the other hand, certifies completed projects and does not mandate and form of participation or consultation.

'masterplans.' According to Callway, Dixon & Nikolic (2016), a core assumption of BREEAM Communities is that stakeholders will be better informed about sustainability issues and better able to make more sustainable design decisions by applying the framework. It thus implicitly aspires to influence the planning process in a positive way. An important difference between BREEAM-C and other similar sustainable neighbourhood certification frameworks is that community consultation is a requirement both in the outline planning stage and the detailed planning stage. Design teams must provide the BREEAM-C assessor with a compulsory consultation plan in the first step of the process. Indeed, BREEAM-C takes governance into consideration much more explicitly than most NSA tools; consultation and engagement credits represent 22% of all credits. Procedures in general make up 47% of credits in the 2012 version (Wangel et al., 2016). This at once helps in creating a more democratic and just planning process (procedural justice), and helps developers get buy-in by using a credible process (BREEAM Communities, 2012). Nevertheless, many of its aims are in line with other NSA tools, such as providing transparency and credibility to neighbourhood plans.

Figure 6.1: BREEAM scheme by built environment lifecycle stages. Source: BRE Global. Published with permission.

How the BREEAM-Communities tool was 'framed'

It is important to understand that the BREEAM-Communities framework was introduced rather late in Masthusen's planning process, and thus had little impact on the master plan, although it did have some impact on the detailed plans. In 2007, Malmö municipality and Diligentia organized a master plan competition for the site and invited four architectural firms to

enter. In the end, it was Kanozi Architects who won the competition and who were responsible for the design and structure for the site (Malmö stad, 2011, 2016; Venou, 2014). Thus, the architects' plan influenced heavily the comprehensive plan (skeleton plan) a year later, which retained the same structure as the competition entry. So, by 2008, before the planning team started using the BREEAM Communities framework, it had already prepared the skeleton plan, but had not yet prepared the detailed plans. The skeleton plan did not change much after the BREEAM-C framework was introduced into the planning process, as the planning team decided in some cases to settle for fewer credits so as to not implement changes where they did not see any value (anonymous interviewee).

The first step in adopting the BREEAM-C framework to the Swedish context in the Masthusen project was to create a bespoke manual, which took about a year and involved many meetings with BRE Global, the administering body. Then internally, after the bespoke manual was created, the Masthusen project team began to form their goals and look at each core issue carefully, and how they would impact the detailed plans (BRE Global). After the assessment process with BREEAM Communities, Masthusen project was finally warded a score of 57.5%, which corresponds to "Very Good" (Venou, 2014).

But coming back to the main research question, how did the BREEAM-Communities framework affect the planning process for the stakeholders involved? According to interviewees, applying the framework to get certification involved a lot of extra work. Even just creating the bespoke manual took over a year. For instance, an urban planner from the City of Malmö mentioned in an interview with Regales in 2015 that a number of planning documents were added to the normal planning documents; for him, the key different between a normal urban project and a BREEAM-C certified project was the number of documents necessary to obtain certification, even more so than in other sustainable urban projects he had worked on. The internal Project Manager agrees: "If you ask me now, I would say it is very difficult to do all the administrative things. And I wonder if we could have the same physical results without the heavy administration." (in Regales, 2017, p. 71) This extra work can negatively impact the stakeholder group's momentum. This was sometimes the case in the Masthusen project.; the Project Manager recalls,

> I think that the vibe to this was too negative. The document was too

> thick -- 40 cm of paper and everyone had to read it in English in British ways of expression. It was just too heavy in the beginning, so it's always the same answer here…Everyone was just like "uhhhhh why are we doing this??" And when you start a meeting like that, it's hard to be engaging and feel inspired, even though we tried to put this aside and not only focus on this issue. (Project Manager, 2016)

Interviewees reported both positive ways and negative ways in which this "extra work" was manifested: heightened collaboration (viewed as positive by interviewees), a mandatory community consultation process (viewed as negative by interviewees), and new communication strategies (viewed as positive by interviewees). Certain enabling/inhibiting external and internal factors affected these three themes, leading to certain tensions discussed by interviewees, which are discussed at the end of this chapter. Before going into details on these three themes, however, it is important to understand some contextual elements that impacted the BREEAM-Communities pilot project.

Table 6.1: Impacts of the BREEAM-Communities on the planning process. Source: author.

	Impact of BREEAM-C according to interviewees
Heightened collaboration	positive
Community consultation	negative
Visual communication	positive

6.2 Contextual elements affecting the BREEAM-Communities pilot project

Malmö, a city with a population of 300,000 or so, is Sweden's third largest city and was historically an important industrial centre. Malmö benefits from very progressive sustainable development policies both at the national and local levels. At the national level, Sweden is consistently ranks as one of the world's leaders in policy and performance on climate change (Burck et al., 2014; Germanwatch and Climate Action Network Europe, 2011). In 1997, Sweden started offering subsidies to cities via a *Local Investment Program* (LIP) for ecological sustainability, a subsidy that matches local investments to achieve ecological sustainability in

cities (Fitzgerald & Lenhart, 2016) and in 2003, this program was replaced with the *Climate Investment Program* (KLIMP), which focused more specifically on GHG reductions. At the national level, the Environmental Code contains provisions on land and water management, environmental quality norms, environmental impact statements, and the protection of areas such as nature reserves, and so forth. Also at the national level, Sweden has developed a series of Environmental Quality Objectives (EQOs), an environmental policy that aims to enhance sustainable development, and each municipality must respect these EQOs. At the same time, Swedish cities also benefit from extensive public land ownership and from autonomy in creating local organizational structures best suited to their duties. Local self-government is a longstanding tradition in Sweden; the principle of local self-government is written in the Constitution and is seen as an integral part of Swedish democratic governance (Sveriges Kommuner och Landsting (SKL)). Swedish cities therefore have a lot of flexibility for achieving sustainability goals, and they benefit from both vertical integration with the national government and local autonomy to develop local and context-specific policies. By Swedish law though, all municipalities must develop their own energy strategies and must keep up-to-date comprehensive plans (City of Malmö, 2009).

At the municipal level, Environmental Impact Assessments (EIAs) are important planning instruments that in some cases are mandatory and that have to be part of detailed development plans. Community consultation is also quite important. Before a city council can make a decision on a comprehensive plan, it must engage the community in a minimum two-month consultation process, and before it makes a decision on a detailed development plan, it must consult the local community for a minimum of three weeks (Venou, 2014). In the case of a detailed development plan, the local community also has a right to consult any Environmental Impact Assessments that were performed (ibid), and full transparency of information is expected. In this sense, both environmental sustainability and community consultation are central to municipal planning in Sweden.

6.2.1 Malmö's Western Harbour: a test bed for sustainability and collaborative governance

Today, Malmö is recognized as one of the world's most sustainable cities, a reputation that began when mayor Ilmar Reepalu was elected in 1994 (Fitzgerlad & Lenhart, 2016). After

Malmö lost one-third of its jobs in the late 1980s and early 1990s, mayor Reepalu was determined to revitalize the city based on a three-pronged vision: knowledge economy, connectivity, and ecological sustainability. As such, the redevelopment of Malmö's brownfield sites into eco-districts were heavily encouraged under his leadership. Malmö's success as a sustainable city is based on several strategies, from the adoption of renewable energy, to energy efficiency, focus on green and blue spaces, bikability and walkability (420 km of bike paths), and efficient public transportation. The whole city runs on natural gas or a mix of natural gas and biogas, a process whereby waste is incinerated to generate energy, and it is home to one of the world's largest wind farms (Fitzgerald & Lenhart). Malmö does not have a specific climate policy; however, it integrates climate planning into broader sustainability strategies, such as its Master Plan. The City has set a goal to become climate-neutral by 2020 and by 2030 to run entirely on renewable energy.

In 1996, the City administration purchased a 175-hectare abandoned industrial area from the automaker SAAB in Malmö's Western Harbour, where the Masthusen project is located, with the vision of creating an ecodistrict, or a series of ecodistrict projects. SAAB had purchased the docklands after the collapse of the shipbuilding industry, but sold it after it closed its factory there (Austin, 2013). This neighbourhood was set to be a sustainability model for the rest of the city, and it was also selected as a site for a Swedish housing expo, whereupon the world-renowned Bo01 district was developed, a district powered completely on renewable energy (solar, wind, geothermal, and biogas) and that has two systems for recycling organic waste[21]. Bo01 incorporates climate adaptation and mitigation strategies through a sustainable urban drainage system (SUDS) that filters rainwater naturally into a collection of ponds, canals, and bioswales that eventually lead back to the sea. Learning from its experiences in the Western Harbour, the City of Malmö also tested its sustainability goals in an existing predominantly immigrant

[21] Bo01 (and Bo02) are globally recognized as leading examples of ecodistricts. For example, on the adaptation front, planners created a sustainable urban drainage system (SUDS) that filters rainwater naturally. Bo01 is also powered completely by renewable energy (a combination of solar, wind, geothermal, and biogas) (City of Malmö, 2010; Fitzgerald & Lenhart, 2016). Bo01 also experimented with two different types of organic waste recycling. But Bo01 is not only a success in terms of its sustainability outcomes but also because of its process. Through the *Building and Living Dialogue* process, stakeholders were involved in horizontal networks, where they demonstrated high levels of collaboration, innovation, and capacity building (Fitzgerald & Lenhart, 2016).

community called *Augustenborg*, where it introduced a participatory planning process to help deliver sustainable and affordable solutions.

Why is this relevant to the Masthusen BREEAM-Communities pilot project? According to Fitzgerlad & Lenhart (2016), an important aspect of Malmö's success as a sustainable city is its willingness to experiment and innovate – especially in terms of technical solutions. The authors quote Deputy Mayor Anders Rubin, who explains, "We don't allow anyone *not* to innovate and we don't say we haven't done this before. Experimentation is essential to our progress." (Rubin in Fitzgerald & Lenhart, p. 374) Elected officials and planners in Malmö have used eco-districts such as Bo01 and Augustenborg as test beds and living labs for sustainability and are able to integrate lessons learned into future planning endeavours (Fitzgerald & Lenhart, 2016). It is against this background of a very progressive City administration and urban planning department in a neighbourhood that was targeted for testing and implementing ecodistricts that the Masthusen BREEAM-Communities pilot project must be understood. One could even go so far as to identify Malmö's urban planning context as an **enabling external factor** in the Masthusen project. For example, the internal Project Manager explains, "They are really brave and I am really proud of this municipality actually. The people working there really want to make a change. So we as developers were lucky. It would have been much harder to do this in Stockholm. There they are much more conservative." (Project Manager in Regales, p. 72)

Figure 6.2: Rendering of the Masthusen development. Source: Diligentia (2014) with render by Kanozi. Published with permission.

The Masthusen BREEAM-Communities pilot project – the case study presented in this chapter – is located immediately southeast of the Bo01 district (refer to figure 6.3) and is a project of 10 hectares owned by one of the largest developers in Sweden, Diligentia. It is important to note that the fact that a private developer purchased such a large piece of land and voluntarily opted for sustainability certification is quite unusual in the Swedish planning context, where usually the process would be much more top-down, with the city mandating certain sustainability measures. The project involves a dense lively business area for the Western Harbour, and which was inspired by the "shared space" concept exemplified in Stroget in Copenhagen (Anderberg, 2015). The plan consists of 18 city blocks with 1350 new dwelling units and 50,000m2 of offices, shopping, other services, and a school (Diligentia, year unknown). The proposal also plans for sustainable urban mobility, 15% renewable energy, certified sustainable buildings, space for growing food, and adaptive measures to climate change (BRE Global). The project also aims to be a hub for the Western Harbour and to connect the various districts through a large diagonal street with a public square (ibid). As the next section explains, this appetite for experimentation and ambition for high levels of sustainability had a positive influence on the Masthusen project by setting the bar very high.

Collaborative governance pilot projects happening in parallel to the BREEAM-C pilot

Malmö is well-known for its open and collaborative planning practice. Malmö specifically, and Sweden more generally, have a history of collaboration with professionals and developers in order to achieve stringent sustainability targets. Planners in Malmö stay quite involved in privately-led developments and become members of the project management team during the implementation phases. As Wells (2014) describes, "[t]he Swedish approach is built on shared interests, shaping the visions and expectations for implementation through dialogue and collaboration, establishing a culture of trust among the various actors, and formalizing expectations in binding agreements." Typically, in the Swedish context, a city planning office will announce that detailed planning is about to begin in a specific area and Swedish developers are invited to express their interest. The city and developer(s) will then engage in a collaborative process or "developer dialogue" (Wells, 2014) that is used to discuss financial, urban design, construction and logistical components of the project in question. This "developer dialogue" was

also used in Masthusen in the outline planning stage (before the BREEAM-C certification process). The aim of this developer dialogue is threefold: to craft a vision that is aligned with the city's long-term planning objectives; to be consistent with the needs and opportunities of the area, and to provide a realistic financial framework (ibid). The developers then sign a "consortium agreement" that results in establishing a board and several working groups, whose jobs are to "articulate specific objectives, strategies, and performance targets." (Wells, p.24) Since in Sweden, cities own a lot of land compared to North American cities, the consortium partners then negotiate with the city for the price of the land, which is influenced by the provision of infrastructure, financing, affordable housing, community amenities, and so forth. The consortium members and the city are encouraged to reach a mutually beneficial agreement (ibid). The "developer dialogue" process in Sweden "means cultivating a culture that fosters and rewards trust and collaboration instead of skepticism and confrontation." (Wells, 2014)

Taking this "developer dialogue" process one step further though, from 2004-2009, Sweden experimented with a process called *Building and Living Dialogue*, which was part of a national voluntary agreement for the sustainable building sector as a means for achieving smoother, more holistic planning processes aimed at sustainable cities, and which involved different stakeholders in collaborative dialogues (Smedby & Neij, 2013). Several programs were developed on the topic of urban governance for sustainability, and one of them was called 'Constructive Dialogue,' (*Det Goda Samtalet*, for its name in Swedish). This program aimed at building collaborative governance processes that led to constructive dialogue in urban development projects, and which involved stakeholders from various sectors, and sometime a facilitator, to promote sharing knowledge and creating common values (Smedby & Neij, 2013). Malmö and Stockholm were two of six different municipalities that experimented with the Constructive Dialogue program, where in Malmö, the neighbouring Bo01 and Bo02 were part of this pilot program.[22] Generally, the municipal Planning Department coordinated the various

[22] Malmö took these collaborative governance processes even further: when Bo01 fell short of its energy goals, Malmö developed the *Building and Living Dialogue* process, which engaged city planners, private developers, design professionals, and construction companies in a mandatory set of meetings on energy efficiency, renewable energy, green space planning, safety, and affordability (Fitzgerlad & Lenhart, p. 372; Austin, 2013). Here, "the dialogue sessions modified and ratified the philosophy and goals of the project, but more importantly, they were a mutual learning opportunity for the city, project planners, and developers." (Austin, 2013, p. 36)

platforms for collaboration (meetings, round tables, public hearings, workshops, etc.) in the various pilot projects. Meetings between the general public and the City before any official zoning proposal was submitted was key in many of these projects, as this helped to consolidate the developments' intentions and avoided polarization between different actors (Smedby & Neij, 2013). According to Smedby & Neij, the Constructive Dialogue program was very successful, and all six municipalities continued to work with a collaborative planning approach. Other benefits of this process were that knowledge was successfully shared between different sectors throughout the Constructive Dialogue process, and private developers who did not have experience in sustainable construction were able to learn a lot (ibid). In other words, it encouraged learning. According to Fitzgerald & Lenhard (2016), through the Constructive Dialogue pilot program, Malmö was effectively able to engage in a process of "double-loop learning," a term coined by Argyris and Schön (1974; 1978) that means an organization engages in an *ongoing* process of learning, adaptation, and reevaluation (Fitzgerald & Lenhard, p. 367). Moreover, the Bo01 eco-district provided important learning opportunities for Malmö to experiment with new technologies that work best for the local context and culture(ibid). This kind of reflexive practice (Argyris & Schön, 1974, 1978) allows for Malmö to share lessons learned and accelerate climate and sustainability planning. Table 6.2. compares the *Building and Living Dialogue* process described in the previous sections with the *BREEAM Communities* framework.

Table 6.2: Comparison between Building and Living Dialogue process and BREEAM-Communities framework.

Building and Living Dialogue	**BREEAM-Communities**
The *Building and Living Dialogue* is a national (voluntary) participatory planning process that engages city representatives, property developers, architects and construction firms in a mandatory series of meetings on certain topics. It was first developed and applied to 6 Swedish cities as a means for achieving more smooth planning processeses in order to develop sustainable and attractive cities through collaborative dialogue between different stakeholders.	*BREEAM Communities* is a voluntary development assessment framework administered by BRE Global and originates from the UK. It evaluates and assesses (giving a final score) medium to large scale urban development masterplans that can be either new developments or urban regeneration projects. A third-party, neutral assessor performs the assessment. Although not its *raison d'être,* community consultation is a mandatory component of BREEAM-C.

While the Masthusen project was not one of Sweden's six Constructive Dialogue pilot projects, it must nevertheless be understood as happening in parallel to the Constructive Dialogue pilots and the City of Malmö developing the *Building and Living Dialogue* process. Moreover, these pilot projects were happening in the same Western Harbour neighbourhood in

Malmö, with the Bo01 and Bo02 ecodistricts located immediately northwest and north of the Masthusen site (see figure 6.3 for a map of the Western Harbour). An urban planner for the City of Malmö explains, "The Masthusen project does not relate *directly* to the [Constructive Dialogue pilot program], other than being around the same time as dialogues were held in other projects, and relating to the fact that the city of Malmö believes strongly in dialogue with developers generally." A general air of and appreciation for collaborative planning was thus a second external enabling factor for the Masthusen project. The baseline for urban development both in terms of sustainability outcomes and processes in Malmö's Western Harbour was thus set quite high.

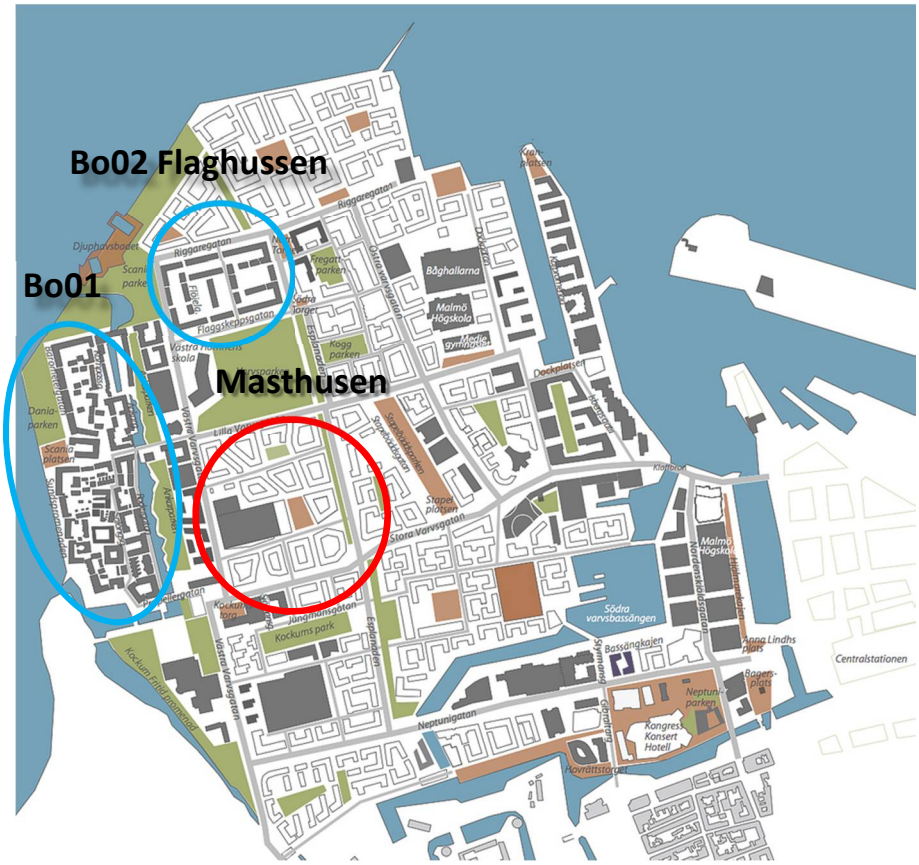


Figure 6.3: Western Harbour Structural plan and future expansion. The area in the red circle indicates Masthusen. City Planning January 2011. Source of base image: © Malmo city planning office, 2012. Published with permission.

6.3 Collaboration in the Masthusen project: more dialogue, earlier on

Applying the BREEAM-C framework required a lot of extra work for the planning team, which in turn required heightened collaboration – a theme that surfaced frequently in interviews with pilot project stakeholders, yielding 18 results in nVivo (11 of which focused on 'dialogue').

While overall, this collaboration was viewed as positive and effective, some challenges and tensions nevertheless emerged.

The BREEAM-C certification process in the Masthusen pilot project required collaboration between various diverse stakeholders (Innes & Booher, 1999, 2010), whose roles and relationship to the project are described in figure 6.4.

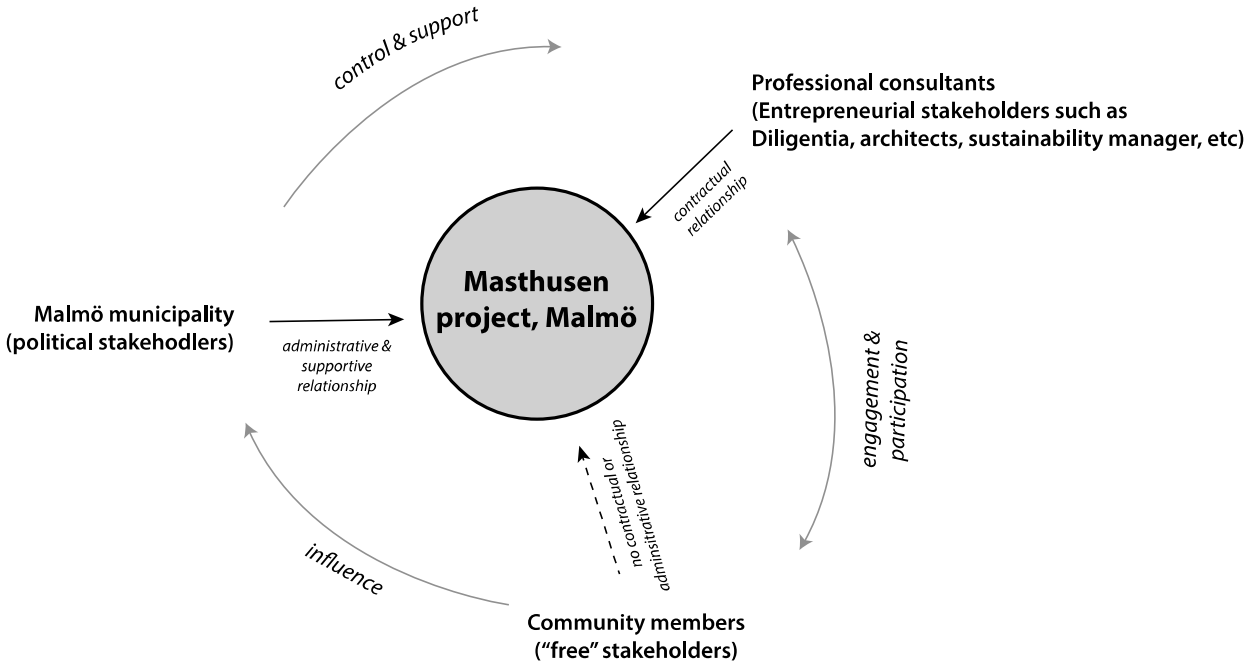


Figure 6.4: Masthusen project stakeholders and their relationships to the project. Source: author. The bold text represents the stakeholder type, and the arrows represent the type of relationship and direction of such a relationship. For example, Malmö municipality controls and supports the professional consultants. However, the relationship of engagement works both ways for the community members and professional consultants.

Applying BREEAM-C to the Masthusen site involved Diligentia, the City of Malmö, an external sustainability coordinator from the consultancy firm, WSP Group, and the BREEAM-C assessor. White Arkitekter, the assessor, was hired to certify Masthusen on behalf of BRE Global and Diligentia, and afterwards, the firm collaborated with the planning team in order to develop the basis for certification. On the developer's side, Diligentia hired an internal Project Manager / Project Manager to work closely with the BREEAM-C assessor throughout the certification process. The City of Malmö was not hugely involved in the certification process, but provided support and attended some meetings to ensure that the Masthusen project conformed with city guidelines. The client group also hired a sustainability coordinator from WSP group to facilitate planning team meetings and collect documentation for the certification process, and an

anthropologist to lead the community consultation process – a requirement of BREEAM-C. Kanozi Arkitektr are not included in this figure, since their master plan design in the 2007 design competition was prior to the planning team using the BREEAM-C framework.

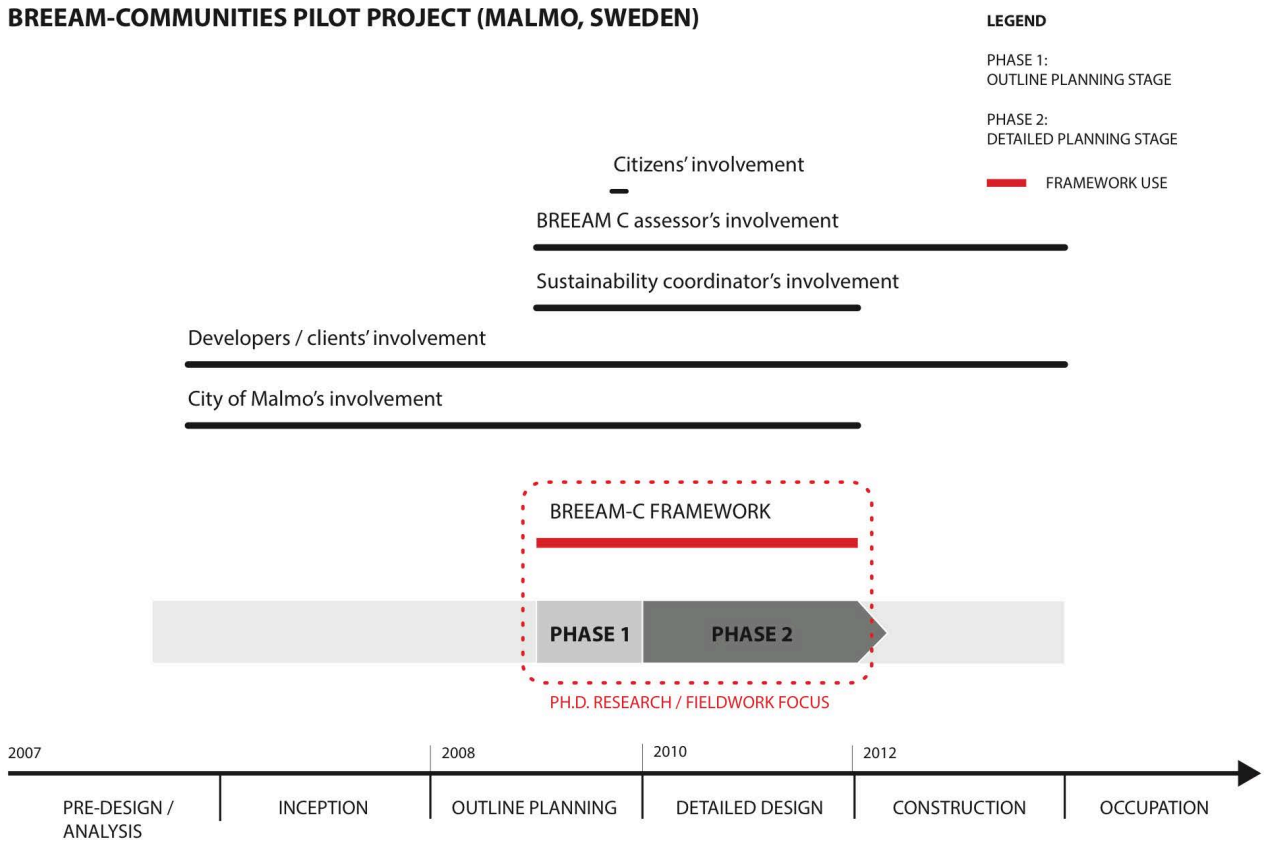


Figure 6.5: Masthusen project timeline and stakeholder involvement. Source: author.

The first phase of applying the BREEAM Communities framework involved self-organization (Innes & Booher, 1999) to create the bespoke manual, which took about a year, according to the Project Manager. This process involved authentic dialogue (Innes & Booher, 2010) with many meetings with BRE Global, where the BRE Program Manager would sometimes visit Malmö from the UK for meetings or the planning team would have frequent video conference calls (ibid). The Project Manager stresses that this phase was very "heavy" since the planning team had to wrap their heads around BREEAM-C's fifty-two topics and try to decipher the intent of each credit, written in a foreign language for the Swedes on the planning team. As the planning team realized that there were too many specific issues, they divided the work into five categories: climate, urban environment, material resources, houses/flexible building, and

behaviours (Project Manager, 2016; Regales, 2015). So, after entering in the outline and detailed planning stages of applying the framework, many workshops were then organized to discuss these different areas within the team. In this way, the BREEAM-Communities framework served as a tool to guide these collaborative processes between the different stakeholders (Regales, 2017). Meetings occurred regularly between the client group, City of Malmö urban planners, sustainability coordinator, and BREEAM-C assessor. Internal agreement was sought for performance criteria, such as energy, and then a program was created for that specific issue. According to the sustainability coordinator, meetings were held between all the different developers on a bi-monthly basis to go over the BREEAM-C demands and explain how those could be implemented "in a good way." An urban planner from the City of Malmö explained how he thought it was a good process:

> They asked for there to be this kind of representative group so we met once a month and then they took different issues to the table and then they took them back and gave an answer or vice versa. I thought this was a good process, this *continuous dialogue* with different departments in the city and the developer. And there was also another developer present that was thinking about BREEAM certification in another district in the Western Harbour. So I thought that was good that we had two projects and all the people from the city meet regularly. (Urban Planner at the City of Malmö, 2016)

Finally, collaboration between the different developers, sustainability coordinator, BREEAM-C assessor and consultants continued even *after* the final certification in 2012, as the planning team continued to have meetings with the different property owners within the area to follow up on how to implement different demands and opportunities (Sustainability Coordinator, 2016). As described earlier in this chapter, half-way into the planning process, Diligentia sold five of the 18 city blocks to three other property owners, who signed an agreement to implement the BREEAM-C certified detailed plans. The different property owners had to show the sustainability coordinator drawings and evidence to show that they were actually properly implementing the detailed plans, and so this involved continuous meetings and site visits by the sustainability coordinator after the final certification (ibid). Although BRE Global does not do post-occupancy certification – in other words, there is no mechanism in BREEAM Communities to make sure that the certified plans are in fact built as proposed – Diligentia signed completely voluntary

agreements with the other developers to ensure that Masthusen was built as proposed to their plans.

In terms of *who* was involved in the Masthusen BREEAM Communities pilot project, the project did not bring in many atypical actors. What was different in the pilot project compared to regular planning in the Swedish context was how early the dialogue started – a trend set by the Swedish Constructive Dialogue pilot program. Starting dialogue very early on is very important to the process, explains the Diligentia internal sustainability consultant: "[T]he most important thing is to have a common vision for what will this area be... And all this discussion should take place in an early stage of the development." (Project Manager in Venou, 2014) Moreover, in an interview with the sustainability coordinator for the pilot project, he exmphasized that "BREEAM Communities is about the process in the very early stage and you have different contracts or different papers between different stakeholders." The sustainability coordinator explained that it is a good thing to have this engagement and investment early on; however, it would take Swedish professionals to change their mindset and their usual way of doing things (Sustainability Coordinator, 2016). Similarly, a study conducted by Clarin (2014) in Täby near Stockholm also validates this finding. She explains, "The conclusions point out that social planning is changing primarily because the tool serves as a checklist, and that the usual working methods of social planning change….[S]ocial planning for all involved stakeholders changes through collaboration and broader dialogue at an earlier stage of the planning process than in practice." (Clarin, 2014) In fact, BRE Global makes it clear that stakeholder management *early on* is key to the BREEAM Communities process (see figure 6.3.), and so in this sense, the BREEAM-Communities framework – although fundamentally an assessment method – was not so different than the two Constructive Dialogue pilot projects happening in Malmö around the same time in the way that encouraged heightened collaboration early on.

The flip side of engagement very early on in the planning process is that it is not what most practitioners in Sweden are used to, explained some interviewees, outside of those participating in the rather recent Constructive Dialogue process. In an interview with the Masthusen BREEAM-C pilot project sustainability coordinator in May 2016, he explained that in Sweden, developers and their collaborators do not usually put as much time and resources in the

early stage as BREEAM Communities demands, although this might start to shift under the influence of the Constructive Dialogue program. Very early collaboration can be a deterrent for developers who do not have the necessary budget for the early stage. Some developers may not want to invest so much money upfront in case the project does not move forward, increasing their risk. Moreover, *who* will pay these extra costs is essential to clarify very early on.

6.3.1 The benefits of heightened collaboration in the certification process

Interviewees involved in the Masthusen project identified several positive aspects of how collaboration was carried out – which were influenced by certain enabling internal factors. Many of the interviewees agreed that the BREEAM-C framework was, above all else, effective in sparking dialogue. "That's one of the key benefits that people using the scheme have identified and fed back to us" explains the BREEAM Communities Manager from BRE Global, "is that it has initiated conversations and it has put subjects forward that maybe wouldn't have come up. And we've heard that from people in Sweden and people here [in Malmö]… that it also brought people together talking about those things earlier than they would have normally, bringing forward those discussions, which is important if you are going to try and integrate a particular kind of design, or a technology like decentralized energy…." (BREEAM Communities Manager, 2016) One interviewee also mentioned that the nature of the dialogue changed over time. In the beginning in 2010, it was a "marketing thing" for Diligentia and they wanted to have an excellent score. However, four years later, they did not speak about the score that much anymore and were instead speaking more about their insights from the tool, and about rather complex sustainability issues. Arguably, this was a very positive impact that the BREEAM-C framework had on the design process. Another benefit of the tool is that it "takes the room for negotiation away" because if it weren't for the certification scheme, certain stakeholders could easily start negotiating during the process and negotiate down certain sustainability issues (Project Manager in Regales, 2015). The BREEAM-Communities criteria offered the Project Manager and her team strong arguments to push for sustainability measures and put demands on the new property owners who purchased the five city blocks. In this sense, it helped create a shared purpose for the different members of the planning team and forced them to build consensus surrounding these issues (Innes & Booher, 1999a). Several interviewees also mentioned that the framework

helped create a shared vision between the public and private sectors, and since it was a new and interesting tool, it generated interest from the City and made the City want to learn and participate (Regales, 2017). Finally, the framework was a useful guide for identifying the shared vision, priorities, and steps for achieving goals within the collaborative process.

It is clear from interviews and primary and secondary source documents that for the most part, the momentum in the planning team was sustained over a long period of time, and the planning team was able to meet its goals, right through to implementation. There are two internal enabling factors that can help explain this: first, the commitment to certification on the part of the developers, no matter the extra work, time, energy, meetings, and so forth; and second, belief on the part of the planning team in the power of collaboration.

6.3.2 Collaboration challenges, barriers, and tensions

While it is true that in general, the heightened collaborative process in the Masthusen project was effective and continued even after certification was achieved, it did nevertheless encounter some small road bumps along the way. It is not unusual that in an urban-scale project bringing together diverging stakeholders that these stakeholders often have diverging motivations and interests. A few interviewees mentioned the challenge of having different motivations or priorities – an inhibiting internal factor. More specifically, two interviewees mentioned the difficulty of dealing with stakeholders who were motivated by the cheapest solution, when the majority were motivated by sustainability solutions. The Diligentia Project Manager, for example, mentioned different interests "colliding." (Project Manager, 2016) Any divergences in momentum, interests, or project priorities were not between different types of stakeholders (for instance the developers and the city), but were instead internal in developer client group itself. This is because after Diligentia sold the five city blocks to the other property owners, these new property owners did not have the same priorities and project vision as the core Diligentia team members, nor did they have the same strong drive for implementing the BREEAM Communities detail plans. This split in the level of momentum is depicted in figure 6.7. Although not as extreme as having completely different project priorities, a similar challenge to collaboration in the certification process was agreeing on specific goals or how to achieve these specific goals. One example is that one stakeholder might argue that kilowatt hours are important

for a certain sustainability metric, whereas another would argue that CO2 emissions was the important thing to measure. The Project Manager explains, **"**It's two different ways of achieving the same goal, but it's just very hard to find common, specific goals." (Project Manager, 2016) Ultimately though, interviewees suggested that these instances were minor, and there were no communication breakdowns or signs of contested collaboration.

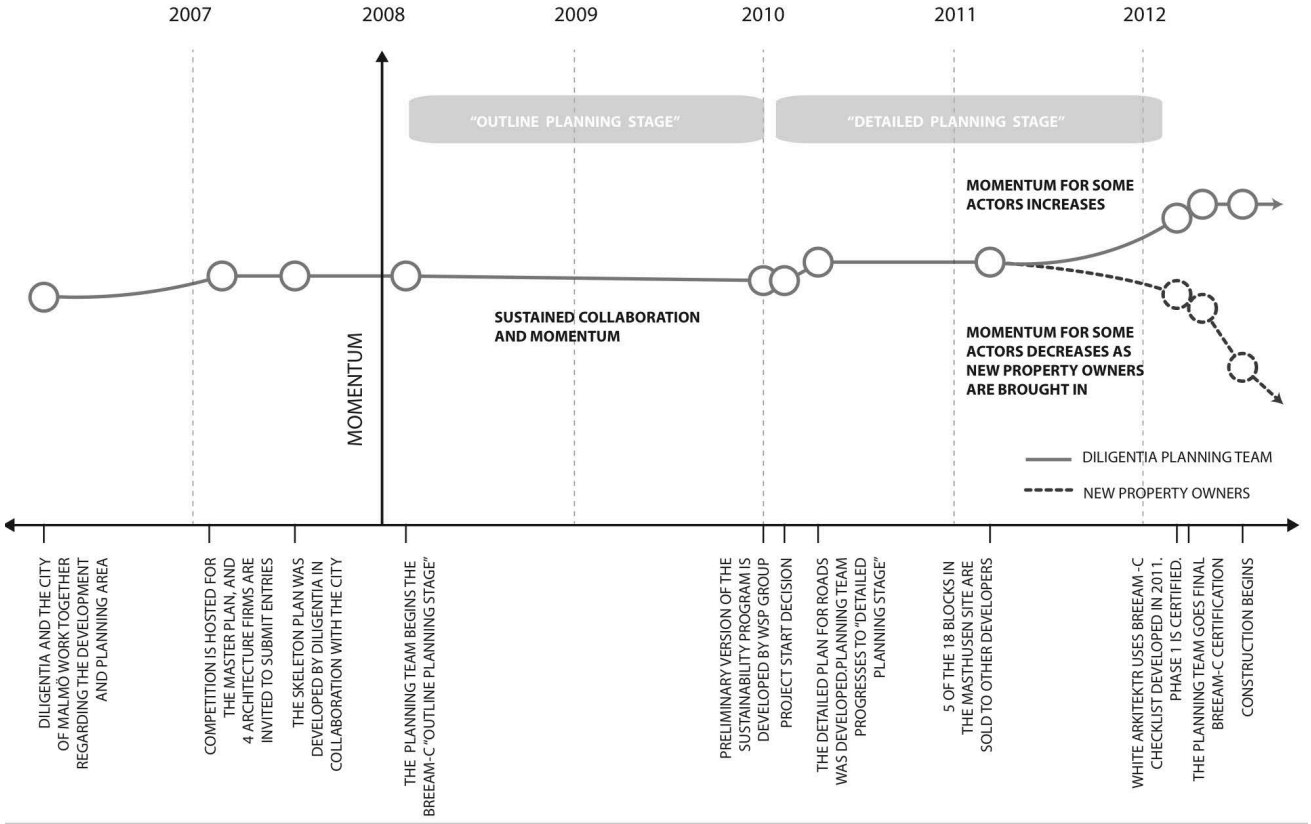


Figure 6.6: How momentum was maintained or increased over time for most stakeholders in the Masthusen BREEAM-C pilot project, while it decreased after 5 blocks were sold to new property owners. Source: author. The x-axis shows key events in the pilot project that either positively or negatively affect momentum (as they relate to four key phases in the process). The y axis represents the level of momentum, from low to high.

Moreover, interviewees identified several collaboration-related challenges, which are described below:

- *Relations with BRE Global:* It is important in eco-district pilot projects, when planning teams are using an assessment tool for the first time, that they feel supported and have staff from the certification body that they can talk to and ask questions. In the Masthusen pilot project, some planning team members felt frustrated with the engagement from BRE Global and felt misunderstood. For

instance, the Project Manager assures that the BRE Program Manager was "so good," but she was just one person, so the Project Manager couldn't always get the answers she needed to convey back to the DIligentia CEO and pilot project steering committee (Project Manager, 2016).

- *Not enough credits awarded for collaboration:* While community consultation is a requirement in both stages of the BREEAM Communities framework, the framework arguably does not recognize the amount of collaboration necessary for achieving BREEAM C's objectives. Urban design is much more complex than an individual building and requires the coordination of many different people from different sectors. In response to this issue, the Project Manager suggests that BREEAM-C should award more credits for collaboration and discussion.
- *Time.* Developing a sustainable neighbourhood takes a lot of time and energy. The Project Manager explains that to begin with, "There are so many people to talk and convince that the idea to use the tool is good and worthy. For this you need energy, time, workshops and money and all these in the beginning because this way it would be easier to continue afterwards." (in Venou, 2014, p. 69) Furthermore, she argues that everybody involved in the certification process should understand the process and tool before the feasibility studies are done in order to agree to put in money from the beginning.

Moreover, an important tension surfaced in the collaborative process: the tension between cost-driven priorities and sustainability-driven priorities for different members of the planning team. This tension created small roadblocks in the planning process; however, most of the time, the BREEAM-Communities framework and the constant reminder of the requirements for certification was able to be used a bargaining chip in these difficult negotiations between the different developers.

Even though interviewees said that the planning team collaborated quite well during the Masthusen project, and that there was overall a very low level of conflict, they nevertheless had some profound insights about the types of challenges to collaboration that exist in eco-district pilot projects, such as Masthusen. All of the challenges listed above are hardly specific to the BREEAM Communities framework. On the contrary, difficulty agreeing on goals, diverging

motivations, belief in the process, the character of the tool, extra work, timing, etc., could all be said about many different sustainability frameworks. They are therefore useful and relevant for stakeholders considering using a neighbourhood sustainability framework BREEAM-C or other. Moreover, they provoke the question of whether tensions and conflict can actually lead to greater sustainability: are tensions an opportunity to learn and adapt together?

Table 6.3: Collaboration in the BREEAM-Communities pilot project. Source: author.

Process attributes	**Source**	**BREEAM-Communities**
Diversity of interests	(Innes & Booher, 1999, 2010)	
Interdependence of interests	(Innes & Booher, 1999, 2010)	√
Authentic dialogue	(Innes & Booher, 1999, 2010)	
Shared purpose	(Innes & Booher, 1999)	√
Challenge the status quo	(Innes & Booher, 1999)	√
Self-organization	(Innes & Booher, 1999)	√
In-built capacity	(Oliver & Pearl, 2018a)	√
Leadership	(Oliver & Pearl, 2018a)	√
Belief in the process	(Oliver & Pearl, 2018a)	√

6.3.3 Reflecting on collaboration in the Masthusen pilot project

Interviewees interviewed about the impacts of the BREEAM-Communities framework on the planning process above all discussed the extra work generated by working through the 398-page technical manual, and the heightened collaboration that this required. The certification process brought together a wide sphere of project stakeholders, with more meetings and coordination occurring, and beginning much earlier in the design process than would usually be the case in a traditional urban project. In spite of the extra workload generated by the certification process, by believing in BREEAM C's importance and being unified around a shared purpose, a dialogue was maintained over a long period of time, which kept the cohesiveness of the project team strong, leading interviewees to describe heightened collaboration in a positive light. Certain internal and external factors were identified as either enabling or inhibiting collaboration, and the tension between cost-driven and sustainability-driven priorities of the

different developers emerged as an important inhibiting internal factor. Fortunately, the ambitious targets set by the BREEAM-Communities framework often took these negotiations off the table. The Masthusen project had strong sustainability ambitions from the outset and benefitted from Malmö's very progressive city administration and collaborative governance practices (enabling external factors). But did collaboration simply help get the job done? Or did it lead to significant innovations and complex problem-solving – the kind of integrated, synergistic thinking described in the regenerative design literature? While it is difficult to answer this question with absolute certainty, at no point in any of the interviews did the interviewees talk about an "aha" moment, where collaboration led to solving complex problems, creating leaps in the sustainable design strategies proposed, or creating significant changes to the project plans. However, more on the contributions of these case studies to a change in paradigm will be discussed in **Chapter 8: Shifting the Paradigm**.

6.4 Community consultation in Masthusen

A second theme discussed heavily by interviewees when asked about how the BREEAM-Communities framework affected the planning process was community consultation, which generated 14 results in nVivo. Universally, interviewees spoke about the uselessness of this requirement in the Masthusen project, which was a cause of frustration for the planning team. For instance, the Project Manager and an urban planner from the City of Malmö both agreed that "[Community consultation] causes difficulties and many unnecessary additional meetings." (Project Manager, 2016; Urban Planner at the City of Malmö, 2016) Community consultation is a heavy focus of the BREEAM Communities framework and is a mandatory part of certifying the master planning process. The framework aims at the engagement of local community members at the earliest stages of the planning process in order to improve the opportunity for the integration of sustainable design (BRE Global, 2013a, 2013b). Community consultation begins with the mandatory consultation plan described under COM2-Consultation, a credit that aims "to promote the communities' involvement in the design of the development and to ensure their needs, ideas and knowledge are taken into account so as to improve the quality and accepting of the development." (BRE Global, 2011, p. 122) The minimum for obtaining this credit was to

undertake community consultation during the preparation of the brief from which "alteration has been made to the final design plan." (ibid) For two credits, the team was to meet the minimum requirement plus show that the findings from the consultation were expected to change the final design plan; and to get three credits, the consultation process had to be independently managed with collaborative workshops (BRE Global, 2011). Consultation and engagement is also a requirement in the second step of the certification process. However, as will be described in this section, a tension exists between the intentions of the framework and the reality of how community consultation was implemented.

While the standard does provide guidance on what kind of stakeholders to consult, it does not provide much detail on the processes of engagement with different stakeholder groups. The BREEAM-C Manager, who spearheaded the development of the BREEAM-C framework, explains: "We are encouraging people to have conversations and consult with the right organizations and stakeholders and the community. A lot of it is about community participation." (June 2016) BREEAM-C 1.0 was "very clear about what you should do and in what stages" (Project Manager, 2016) including how to select participants, which consultation methods to use, and so forth (BRE, 2011). The planning team hired an anthropologist to lead the community consultation component. The anthropologist was not a core member of the planning team but was simply contracted as an external consultant for the duration of the community consultation workshops and surveys. She met with different focus groups in the neighbourhood (such as pre-school, teenagers, retired people, and businesses) and asked them about their expectations. The BREEAM-C technical manual even describes what kinds of questions to ask the community in different workshops and has requirements on how to consult the focus groups (Project Manager, 2016).

6.4.1 The limits of community consultation in the Masthusen project

Although the BREEAM Communities framework is designed to have a strong community consultation framework, this aspect faced many limits in the Masthusen project that should be underscored. First, it should be mentioned that consultation is only required in about 22% of the BREEAM-C credits. As Callway, Dixon & Nikolic (2016) explain, "BREEAM Communities does not prevent other issues from being part of a consultative process, but fundamentally, BRE does not

consider that the selection of issues for consultation should occur through the consultative process." (p. 8) Thus to begin with, it is important to understand that community consultation does not drive the certification process but is just one component of it, and the rest of the manual is quite prescriptive and does not provide the community with the opportunity to define its own vision of sustainability.

It is relatively uncommon for assessment tools to require community consultation, and the impacts of this consultation both on design outcomes and on the planning process are not well understood in the literature. Rydin and Pennington (2000) and Schweber (2013), for instance, warn against the effects performance and assessment tools may have on dialogue between stakeholders, because the breadth of stakeholders involved in a neighbourhood masterplan increases the project's complexity, and not all stakeholders have equal decision-making power. Since usually NSA tools such as BREEAM-C are used to certify private developments, the link with local community stakeholders is both tenuous and ambiguous. How performance and assessment tools like BREEAM-C address different stakeholder agendas is arguably one of the major challenges that such tools face. For instance, are all of the right stakeholders involved? When should they be involved? And should their involvement be active or passive? How much decision-making power should they have?

An important limit to consultation in the Masthusen project was the fact that it was a new development rather than a regeneration project, and so it was difficult for the planning team to identify what definition of 'community' should be employed in the community consultation process. An interviewee notes, "In the Western Harbour case, they did have some consultation, but not that many people were living around, the infrastructure and schools were outside [the area], which made it a little bit tricky." This challenge is not at all unique to the Masthusen case study, but poses a challenge to all new developments where there is no existing community nearby to participate in the planning process.

6.4.2 Gaps between the intentions of BREEAM Communities and the reality of how consultation was employed

Interviews with stakeholders involved in the pilot project illustrated an important gap between the intentions of the BREEAM Communities framework – which aim for meaningful

participation from the community and for real impacts on the master plan – and the reality of how consultation was employed in the Masthusen project (refer to figure 6.7 below). This is perhaps an all-too-common experience in planning around the world.

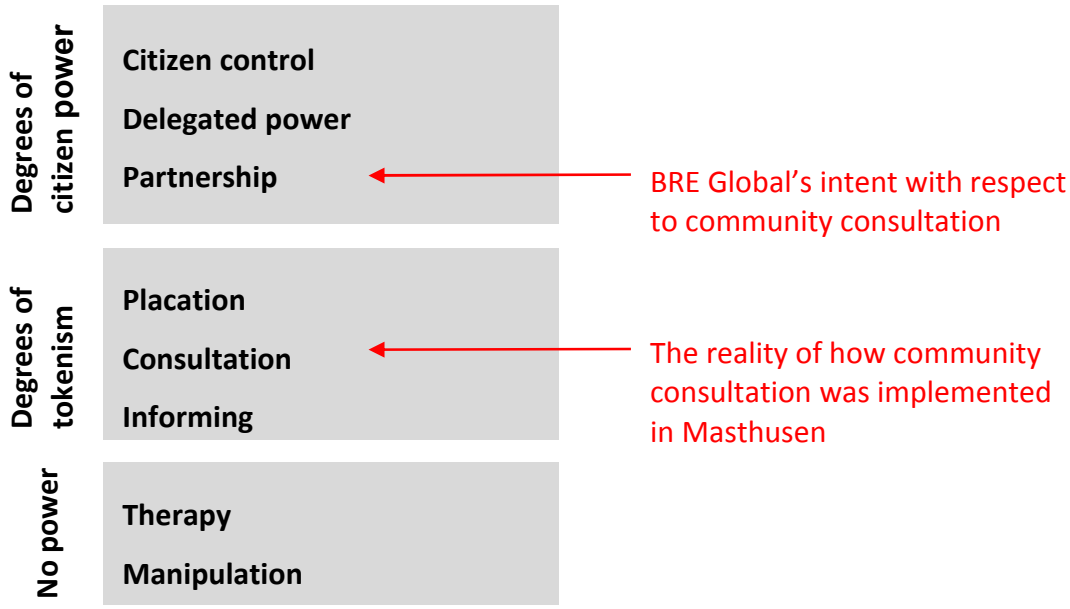


Figure 6.7.: The ladder of citizen participation. Source: author. Based on Arnstein, 1969.

The intent behind the BREEAM Communities consultation requirement is that community consultation be meant to influence the final design plan, meaning that the community's wishes and desires are not only meant to be heard, but to be taken seriously into consideration. The BREEAM Communities Manager from BRE Global explains, "What we tried to do is, throughout the manual in different stages of design and through different subject areas, require input and involvement from the community in saying what they think is important, how they think things should be addressed, so trying to find a middle ground." (BREEAM Communities Manager, 2016)

Unfortunately, community consultation was brought in quite late in the master planning process in Masthusen, and the community members' wishes were heard, but did not impact the detailed plans – in essence their input was inconsequential to the final design. The Sustainability Coordinator recalls: "Some workshops we did just because of BREEAM Communities, because it was actually too late to have dialogue or consultations that would change something. So it was more or less just to reach the credits, I would say." (Sustainability Coordinator, 2016) In a similar way, the Diligentia Project Manager adds,

> I think consultation could affect [the design] even more, if we were even earlier, before we set the detail plans. If we could have done this one or two years earlier than we did, we could have affected it even more. [The consultation process] was really frustrating. We put so much time into something that didn't really matter. (Project Manager, 2016)

She continues, "It was kind of tough to take [community participants'] opinions and their wishes into the project…I don't know how much it actually gave us because if you open up too much, the expectations are a bit too high. I think if we were to do that again, you should really think of what you ask, because otherwise if you are like "Oh we can build whatever you want" - of course you can't!" (Project Manager, 2016) Because there was no existing community to speak of, and because the consultation process was introduced so late in the planning process, the results were rather tokenistic. In the end, the team got the consultation credits, but no meaningful changes to the design resulted from the consultation process.

6.4.3 Criticisms of how community consultation was used in Masthusen

In the end, it could be argued that the 'participatory' dimension of the BREEAM Communities framework was a failure in the Masthusen project. Or at the very least, it did not live up to the intentions that BRE Global had set. Several criticisms of the consultation process can be made and are summarized below:

(1) *It came too late*. Community consultation meetings occurred after the master planning exercise was well underway, and so it was too late for the community to affect the programming or major design elements or to put their rubber stamp on the design.

(2) *It did not impact the design.* The feedback from the community consultation workshops and focus groups had minimal, if any, impact on design. This, however, was the intent behind the BREEAM-Communities credit.

(3) *Community consultation workshops were not 'steered' properly.* Interviewees reflected on why community feedback had little impact on design, and said that this was in part due to the lack of 'strategic direction' of the workshops. When community members are allowed to speak completely freely and the discussions are not focused properly on how

to resolve certain issues on a project, community members may have completely unrealistic hopes and wishes.

(4) *It employed a limited definition of "community."* Masthusen is a new development, and so future inhabitants are undefined. This makes defining the community for the purpose of community consultation very difficult; however, it could be an opportunity to integrate with surrounding communities such as Bo01 immediately northwest of Masthusen, and Bo02 Flaghussen immediately north, as well as existing and future businesses.

Moreover, this discussion leads to two important tensions that surfaced in the community consultation component of the BREEAM-Communities pilot project: first, the tension between the intentions of a tool or framework and the realities of how it is implemented; and second, tensions between global and local contexts. In the first instance, users of certification systems may try to find the easiest solutions just to get certified, and therefore cut corners, or ignore important credits just to find the 'easiest' or 'cheapest' solution. The timing of when the BREEAM-Communities framework was introduced into the planning process inhibited any real meaningful integration of the community's vision. And second, Sweden has its own community participation process, anyway. This can pose interesting conflicts or questions when assessment tools are prescriptive surrounding certain issues, which do not take into account local culture and context. For example, in an interview with the Project Manager by Venou, she explains the differences between consultation in the UK and in Sweden:

> There is not an inviting-asking people process, since people are allowed to say what they think when they will be informed for a project in [a format] that usually lasts for about three to six weeks. During that period, people can come and write down in a letter what they think and send it, and these letters will be read and handled properly by the developers. This process which seems really democratic is included by law in Sweden while in England there is not something similar to that. (p. 36)

Similarly, an urban planner from the City of Malmö, who was involved in the Masthusen project, explains the typical consultation process in Malmö:

> You always have a kind of formal consultation process in the planning process. At first you announce that the plan is going to be taken forward. You do that publically. Then you do a consultation meeting with the public. This can be done a lot or a little. Sometimes you just want to have

> input very early on. Other times, maybe the plan is not very big, so you just do it more formally and at a certain stage you send it out for public consultation. In any case, there are two consultations before a plan is politically approved. (Urban Planner at the City of Malmö, 2016)

Thus, rather than controlling the consultation process, the BREEAM-C framework could have been adjusted to suit the Swedish context and its existing platforms and processes.

The Masthusen project, community consultation aside, was able to meet very ambitious sustainability targets. Therefore, the intent is not to criticize the Masthusen master plan or detailed plans. It is simply to evaluate one component of the planning process, which was highlighted by interviewees, and that is the role that community consultation played in the process. Interviewees highlighted how community consultation was a negative for the planning process and only caused frustration for the stakeholders involved, since they knew that it was a futile exercise.

6.4.4 Reflections on community consultation

Community consultation and participation can be extremely valuable if it is used in a meaningful way; meaningful community participation can help enrich a project by leading to win-win scenarios between different stakeholder interest groups, empowering the community, and creating long-term stewardship in the community. It also represents an opportunity to bridge gaps between technical and local expertise. But this is only possible when there is a fair balance in interest groups (the developer/client, the city, and the community). Moreover, the meaningfulness of community participation in Masthusen was further hindered by the fact that how 'community' was defined, remained somewhat arbitrary. Community consultation came too late in the master planning process for the community to actually have an impact on the visioning, programming, and conceptual phase of the project. And for what little room the planning team had to adjust the plans to fit the needs of the community, it perhaps did not adequately steer conversations in the consultation workshops so as to extract information that would be useful and pertinent, as suggested by the Project Manager. Finally, it is important to understand the role that each unique context plays in the creation of eco-districts. Sweden happens to be quite advanced in terms of community consultation, and so the role that the BREEAM-C framework

could play in this regard, should maybe have been smaller compared to other contexts with less of a culture of collaborative planning, or have been adjusted to suit the Swedish context.

6.5 Visual communication for the planning team in Masthusen

While the extra work generated by the BREEAM-Communities certification process negatively impacted the planning team in the ways described above, it also impacted the design team in new and surprising ways that proved to be quite positive. An interesting theme that surfaced in interviews with stakeholders in the BREEAM Communities pilot project in Malmö was the theme of communication, which yielded 7 results, and whereupon interviewees elaborated quite in depth on the subject. Many of the explanations given by interviewees about communication were connected to problem-solving by the planning team.

Interviewees helped identify a tension between complexity (the detailed nature of assessment frameworks) and simplicity (the ease of communicating the ideas behind the framework), which led to them create innovative working methods. Assessment manuals are often several hundred pages long; for instance, the BREEAM Communities bespoke manual used in the Masthusen project was 398 pages long. This makes it quite tedious to work through. One interviewee explained, “[An] obvious challenge is that [the development assessment framework] is SOO complex. I mean communication-wise, if I had to go out to a municipality and talk to someone who has never used this before, even just to have an overview of the different criteria is too much. They cannot cope with that. We always have to reduce the amount of data that you are actually using.” And as a sustainability consultant and DGNB auditor for Urban Areas in neighbouring Denmark, explains in an informational interview, “We want a holistic tool that is detailed at the same time but that can be easy to communicate and easy to use. And there you have this dichotomy between these two fields.” (DGNB Auditor for Urban Areas, 2016) While he was drawing on his experiences adapting the German DGNB for Urban Districts assessment framework to the Danish context, his expression of this tension can nevertheless be translated to Malmö’s experience with the BREEAM Communities framework, as is evidenced by interviews with key stakeholders in the Masthusen project.

The solution for the planning team in the Masthusen project was to create new "communication tools" to try and simplify the information from the 398-page technical manual. The Project Manager explains,

> We had to find a tool to communicate because it was too complex to discuss all these strategic issues at the same time. So we made it like a mind map. It looked like a harbor with different smaller harbors or docks. And each dock had boats. And some boats, if it was a really important boat like mandatory issues, had this rescue boat attached to it. Each boat could be different colours and different shapes.

She continues, "That was the best thing we did. Because we could actually see how far we had gone through with all these issues just by looking at this [mind map] because you could actually read the colours. Are we down? Have we reached a goal? Or is it certified already? And so on." (Project Manager, 2016) The mind map that the Project Manager was referring to was created mainly to track progress and have an overview of all the different sustainability criteria, and the number of points the team was aiming for (refer to figure 6.8). However, the planning team also created a different type of mind map. The sustainability coordinator from WSP Group mentioned this mind map in an interview in May, 2016. He explained that first, the planning team had to agree on the language to use by translating the British terms in BREEAM Communities to terms for a Swedish context, where all the members of the planning team could speak a common language. After sketching out this mind map in the interview on a napkin, with arrows transversally crossing different major themes, he explained, "If you want it to work in a good way for this issue, this issue is dependent on that issue. And so [the planning team] really started working with connecting the issues…" Although the actual mind maps were not allowed to be published in this dissertation, simplified diagrams of how they worked are presented as figures 6.8 and 6.9.

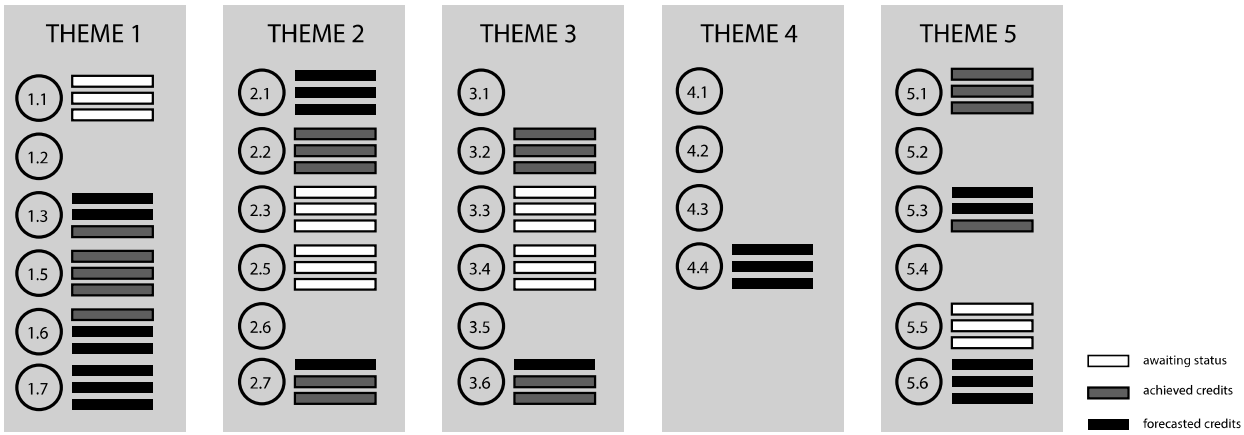


Figure 6.8: Schematic recreation of Masthusen planning team's mind map. The mind map depicts the main BREEAM-C themes and their credits. The white rectangles are credits where the planning team was awaiting confirmation; the grey rectangles represented achieved credits; and the black rectangles represent forecasted credits where the planning group still had work to do. Source: author, based on mind map shared by Project Manager, 2016.

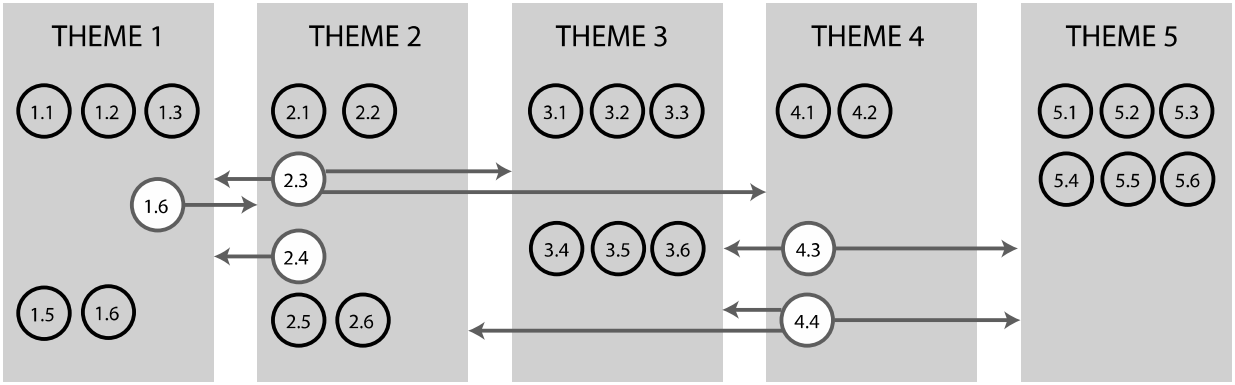


Figure 6.9: Schematic recreation of the second type of mind map created by the Masthusen planning team. This mind map illustrates the synergies and interconnectedness of different indicators. For instance, credit 4.4. impacts themes 2, 3, 4, and 5. Source: author. Based on sketch done by sustainability coordinator and diagram shared by Project Manager, 2016.

These results from the interviews are significant, as the *main tools* that the planning team used to communicate were visual tools with no words, because the planning team felt that the technical manual itself was just too complex and broad to make progress as a group (ibid). Moreover, it also provides evidence to support the position described in Chapter 4: Theoretical Framework that performance-based tools such as the Living Building Challenge, DGNB for Urban Districts and BREEAM-Communities can indeed spark innovation and progress towards a more regenerative, resilient paradigm for the built environment. Innovation and progress need not only be considered in terms of what is built, but also in the ways that planning teams work

together. Co-learning and synergistic, integrated thinking are also very much a part of the shift in paradigm.

Interestingly, the DGNB auditor for Urban Areas back in Denmark also mentioned the creation of mind maps in the DGNB training course in an informational interview. He explained how a student created a mind map of the connections between the 45 different DGNB criteria and mapped out the different synergies. This prompted the team of consultants working on the DGNB for Urban Districts pilot version for the Danish context to discuss whether they should work on visualizing the most important synergies in an urban district. He explains, "You could actually focus on some of the major synergies that you have, because if you combine some of the synergies, you combine some of the criteria." (DGNB Auditor for Urban Areas, 2016)

Coming back to the Masthusen project, after creating the harbour-like mind map, the planning team realized that they needed to create a sustainability program to make their actions towards certification more concrete. This next step involved documenting their actions towards certification. The planning team created a small book with five different themes (such as the urban scale, the interface between urban and private dwelling, biodiversity, etc.) under which they explained their different strategies. The book also included an introduction to BREEAM Communities and how the team certified the Masthusen development. The Project Manager explains, "It was just collecting basic information so that everyone could be on the same ground so to speak." (Project Manager, 2016) She adds, "Everybody could read it and reflect on it, and we could start developing projects through these demands. We continued in parallel to this, working and trying to understand if it worked or if it was too tough."

6.5.1 Benefits of creating visual communication tools

The visual communication tools created by the planning team on the Masthusen project had many positive impacts on the planning process and were in fact the main tools that the team used to communicate throughout the BREEAM Communities certification process. First of all, they were able to simplify the complexity of the 398-page technical manual. The two graphics went to the essence of what the planning team had achieved, and where they still needed work. They were thus able to track their own progress in real time from meeting to meeting. Second, the visual communication tools allowed the team to create a shared language. The team worked

together on translating key items from the British BREEAM Communities manual and agreed on meanings appropriate for the Swedish context (the labels included in the two mind maps). Moreover, as can be learned from universal symbols and signs, visual icons often create common language and remove the ambiguity from technical language. Third, the mind maps allowed the planning team to save time and energy by understanding the synergies and interconnectedness of certain criteria they wanted to achieve. In this way, they could kill several birds with one stone – and all the while, tracking this in a visually simple, comprehensible way. And finally, creating the visual communication tools allowed the planning team to learn and innovate together. This co-learning strengthened their cohesiveness as a group and allowed them to maintain momentum over several years during the certification process.

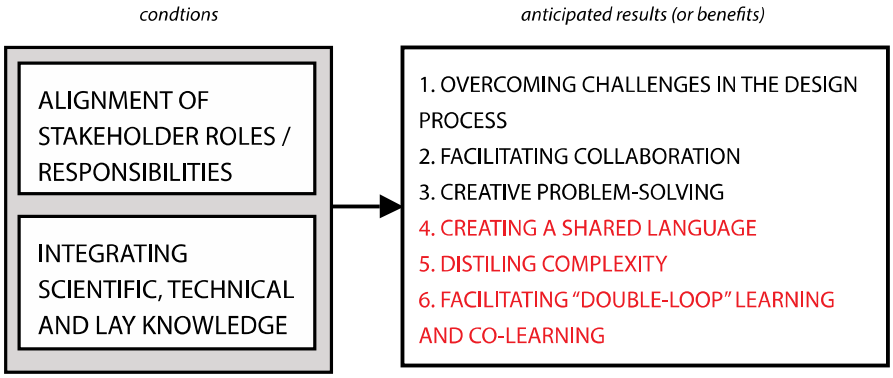


Figure 6.10: Visual communication logic. Expanded conceptual model from Chapter 3. The red text indicates what has been added to the model based on the BREEAM-C pilot project. Source: author. The conditions on the left lead to the anticipated results or benefits on the right, the black arrow indicating the causal relationship.

6.5.2 Conclusions concerning visual communication in the BREEAM-C pilot project

This section described and analyzed the different visual communication tools created by the planning team on the Masthusen project in an effort to simplify the complex technical manual and create a common language. The planning team created three main visual communication tools: a mind map to track progress on achieving sustainability criteria; a mind map to understand the synergies and interconnections between different sustainability criteria; and a sustainability program in the format of a book to collect evidence of achieving the criteria. These visual communication tools proved to be the most useful tools for the team throughout the process and had many benefits – from creating a common language to co-learning and sustained

momentum over time. The fact that the team needed to create these tools can be viewed from two different perspectives: on the one hand, the character of the checklist approach can be questioned on the basis of whether it is appropriate for leading to a more integrative model of practice, as called for in the regenerative design, urban ecology, and resilience literature. On the other hand, it could be argued that setting ambitious targets and extra work involved in this checklist approach by design sparks innovation in the design team. No matter what side of the argument one takes, it is very important to mention that visual communication is completely absent from the literature on eco-districts and eco-district frameworks. Interviews with key stakeholders in the BREEAM Communities pilot project in Malmö, however, reveal that visual communication is perhaps *the* or *one of the* most important elements of the planning process. This therefore represents an important contribution to the literature on eco-districts and eco-district tools.

6.6 Limits of the BREEAM-Communities framework

As mentioned earlier in this chapter and in this dissertation, the BREEAM-C framework is quite unique for a development assessment tool, since it makes community consultation mandatory and aspires to have a real impact on the planning process. As the version of the framework used in the Masthusen pilot project was the pilot version of the framework, there were therefore quite a few comments on the part of interviewees on how it could be improved. Moreover, interviewees expressed several limits of the BREEAM-Communities framework, at least the pilot bespoke version:

- As the Project Manager commented, the BREEAM-Communities framework worked well to get the Masthusen project certified. However, for it to have actually affected the final outcomes and had a more profound impact on the planning and decision-making process, then it should have been introduced one or two years earlier, before the skeleton plan was submitted. The framework should therefore have been much more explicit about timeframes;

- As was emphasized several times throughout this chapter, the mandatory community consultation component of BREEAM-C is quite ineffective unless introduced much earlier on than was the case in the Masthusen pilot project;
- Several interviewees said that the framework was far too complicated (and it has since been adjusted to having 10-12 key issues instead of 52) (Project Manager, 2016);
- The framework does not offer guidance for how to create an aligned vision across the different stakeholders (City, private developers, inhabitants, and so forth) (Sustainability Coordinator, 2016);
- One interviewee mentioned that the 2008 version was too prescriptive and that the 2012 version was much more flexible in that in provides opportunities rather than prescribes ways of achieving outcomes (BREEAM Assessor, 2016);
- It is hard to know if and how the framework impacts design: "The answer is that we don't really know how it impacts on design. I just think its methodologically hard to answer that question. And when you get into interviews with assessors or design team and you ask them, how is this impacting the design? It's really hard for them to pinpoint. Whether you can say that it was BREEAM-Communities that necessarily resulted in the change, that's what's hard to say." (BREEAM Communities Manager, 2016)

In addition to the limits of BREEAM-C listed above, it is important to mention that the framework's *modus operandi* is to assess and certify a district within confined limits. There is no incentive within BREEAM-C for developers to go beyond the borders of their site, either in the process (i.e. inclusion of surrounding community stakeholders) or in the product (i.e. dealing with storm water at a larger neighbourhood scale, designing public space at a larger neighbourhood scale, and so forth). Without explicitly integrating the concept of 'scale jumping' as the Living Community Challenge and Living Building Challenge do, the very nature of performance and assessment tools work counterintuitively or counterproductively to the aims of regenerative development and design. This is one of the main criticisms of regenerative development proponents.

6.7 Paradigm shift: far from regenerative

In terms of the aspired outcomes of the BREEAM-Communities framework, it promotes a very sustainable urban planning model based on walkable, cyclable neighbourhoods with very efficient and 'green buildings,' low carbon, greening streets and public space – all strategies that are fairly technical and scientific, and not necessarily based on 'place' in the regenerative sense of the term. The BREEAM-C framework might be considered *deep green,* but it is not yet regenerative or resilient in the vision it presents for a neighbourhood. Moreover, as all certification schemes, it focuses on certifying a district with fixed borders and therefore does not encourage developers and planners to consider net positive benefits that a project can have on neighbouring communities. It instead is an inward-looking – perhaps approaching net zero – model, but not a net positive model.

In terms of the process, the BREEAM-C framework made only slight advances in the direction of a more regenerative, resilient paradigm – especially because of the already very collaborative culture that exists in Malmö. On the one hand, BREEAM-C requires engagement and participation of local community actors, but as mentioned in this chapter, this requirement was introduced too late in the planning process to have any real impacts and instead just paid lip service. It also did not explicitly strive to help build individual, collective and institutional capacities in the local community to keep the project alive after it was finished.

On the other hand, though, the framework does require a moderate to high degree of interdisciplinary collaboration in order to achieve the credits. Because of the complexity of the framework, it also triggered the planning team to co-learn and develop new tools and methods for working through the 398-page bespoke manual. At the same time of this reflexive, adaptive learning that occurred, the planning team members, through the aid of new visual communication tools, were able to develop an understanding of synergies and interconnections between different sustainability aspects in the project. Thus, at the level of thinking, working, and learning together, the BREEAM-C framework did show evidence of progress as defined by regenerative development scholars.

6.8 Theoretical and practical implications of the case study

Certification systems such as BREEAM-Communities are not necessarily designed to impact the planning process in the way that a process-based framework would; however, this case study demonstrated some fundamental ways in which the BREEAM-C framework did frame and steer the planning process. It thus has some important theoretical implications and practical implications for the area of ecodistricts and ecodistrict tools.

In terms of research and theory, the case study provides some evidence to support the position that performance-based systems can generate innovation. The 398-page technical manual with dozens of sustainability criteria was such a challenge that it spurred creative ways of problem-solving and working for the members of the planning team. The stakeholders involved in the pilot project when faced with the tension of a holistic, complex tool but needing to communicate it in a more straightforward, concise way developed their own communication tools to distill information, track progress, and understand the synergies between the different sustainability criteria. While this may be a relatively modest innovation, compared to the built outcomes that are perhaps necessary for a change in paradigm, it is nevertheless an important contribution to the field. How stakeholders communicate and problem-solve in complex projects such as ecodistricts is quite absent from the literature and deserves more attention.

Building on this last point, however, the tension between performance and process is very much present in this case study. BREEAM-C is primarily an assessment method or a performance-based tool; however, it includes some process-based elements since it covers governance issues and requires community consultation. The question of timing – or when the framework is introduced into the planning process – is thus quite fundamental. If the aspirations of BRE Global is to affect the planning process as much as it is to issue a certification to an ecodistrict, then the framework needs to be introduced from the outset, and perhaps even influence the competition brief. The consequences of introducing BREEAM-C after the skeleton plan for Masthusen was already complete were that the framework did not really impact the vision or the overall layout of the plan, but only somewhat influenced the detailed plans. Moreover, the community consultation requirement had no impact on the plan and was a futile exercise since it was introduced after the major urban planning decisions had already been made.

Finally, another theoretical implication of this study is the question of local contextual factors and their relative importance with respect to performance and assessment methods. This question has already been studied at length by several scholars (Cable, 2008; Garde, 2009; Haapio & Viitaniemi, 2008; Kyrkou & Karthaus, 2011; Säynäjoki et al., 2012; Sharifi & Murayama, 2013), but mostly with respect to the cultural appropriateness of certain sustainability criteria. But since BREEAM-C is also introducing some procedural elements, it is important to question different planning norms, regulations, and processes that differ from place to place. Sweden already emphasizes collaboration between different stakeholders early on in the process and already has a standard participatory planning process for important urban projects, so how does this interact with the processes prescribed in the BREEAM-C technical manual?

In terms of practical implications, the case study provides valuable insight for private developers or other stakeholders leading eco-district projects about the importance of timing when to introduce a certification system. If the project leader is convinced that the project in question is already a model of sustainable, regenerative, and resilient design principles and does not need the tool to help form the major strategies or guide the process, that is a different question than a project leader who is looking for a framework to help guide the master planning process. Performance-based tools such as BREEAM-Communities, DGNB for Urban Districts, and Living Community Challenge so forth could be worked into competition briefs or be used from the beginning of a project to help the planning team create the project vision. However, when they are introduced too late in the process, their role shifts from framing the project to simply checking boxes and planning some of the finer-grain details. Moreover, specifically concerning BREEAM-Communities and its community consultation requirement, introducing the framework too late in the process renders the community consultation process useless. Project leaders should thus use BREEAM-C from its inception and use community consultation to help generate the project vision and get buy-in from the public for their project.

6.9 Conclusion

This chapter began with an overview of the Swedish planning context and its culture of collaborative planning and governance and progressive attitude concerning sustainable planning.

The ‘Constructive Dialogue’ process was discussed as an innovative, Swedish-developed collaborative planning process that aims at early dialogue between urban planners, private developers, and construction managers. At the same time, Sweden also has a culture of community consultation, where municipalities must have at least two public consultation meetings before any major urban development plan is approved. It thus has an existing culture of engaging a variety of different stakeholders around sustainable projects. This planning context was presented as an external enabling factor for the Masthusen project, specifically with respect to collaboration in the planning team.

Collaborative planning in the Masthusen project was overall quite successful, with quite low levels of conflict between different stakeholders. Interviewees praised the BREEAM-Communities for enhancing dialogue between the different stakeholders, and much earlier on than would usually be the case. While some stakeholders *did* have differing priorities, the planning team was able to resolve differences and maintain momentum over time – in fact, so much so that the developer, Diligentia, signed agreements with the other property owners to implement the plans as per the certification documents. One may conclude that in a culture of collaborative planning, the Masthusen project was no exception. However, certain barriers were identified for collaboration, and a tension emerged when Diligentia sold five of the eighteen city blocks to three other developers. While Diligentia was motivated by sustainability-driven interests, according to interviewees, the new property owners were motivated by cost-driven interests. The new owners, however, had signed contracts to certify and implement the district as a BREEAM-Community, so the BREEAM-C requirements often took the room for negotiation off the table and was used as a winning ticket for certain decisions in the detailed plans.

The results concerning community consultation were less positive, however. As explained in this chapter, community consultation is a requirement in both the outline planning stage and detailed planning stage of the BREEAM Communities framework. The intent behind the consultation credits is to have meaningful participation with local communities that could impact a project’s final design; however, in the Masthusen project, a lack of a strong existing community and bringing in community consultation too late in the process meant that community consultation had almost no impact on the design. This was frustrating for members of the planning team, who went along with the consultation workshops in order to get the credits, but

who knew that the exercise was futile. Thus, there was a notable gap between the intent of the credit and how it was implemented in the project.

While community consultation in Masthusen was rather futile, the planning team discovered other ways to be innovative and problem-solve during the certification process. As a result of using a 398-page technical manual that had to be translated and adapted from the UK context to fit the Swedish context, the planning team had to find easy ways of distilling the information and achieving the targets in an efficient way. Consequently, they developed three different visual communication tools that served as the "most important" or "main tools" for the planning team. Two mind maps helped them track progress and understand the interconnections between the different sustainability criteria, and a Sustainability Program book helped them collect the necessary documentation and evidence for certification. Here, the planning team learned together and invented new ways of doing things, new ways of solving problems, and thus can be said to have employed *organizational learning.* This last theme represents a very significant finding in the case study analysis, as it is missing from the literature on eco-districts and eco-district frameworks.

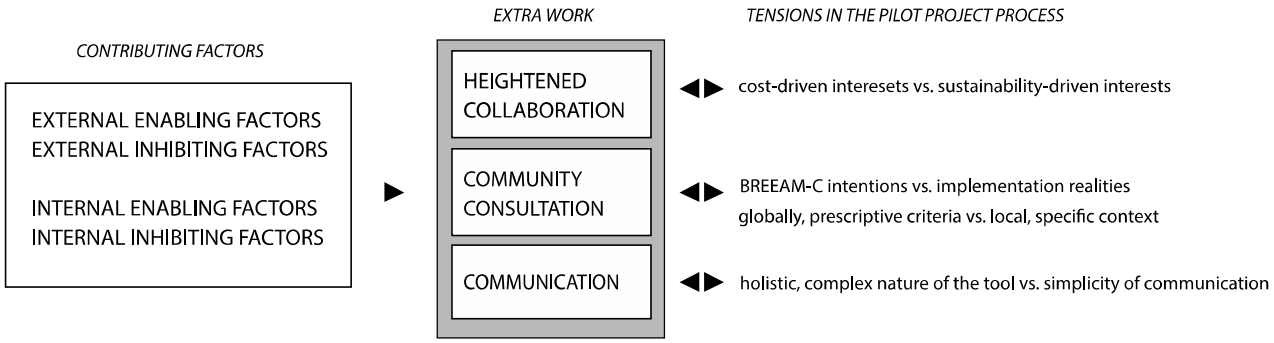


Figure 6.11: Overview of how the BREEAM-C framework impacted the planning process. Source: author.

Above all, the BREEAM Communities pilot project in Malmö illustrates the importance of looking not just at the BREEAM-C framework in isolation, but at how and by whom it was employed, i.e. how it was *framed.* It is difficult to argue that on its own, the BREEAM-C framework will unlikely help contribute to a shift in paradigm in city planning. However, it has the potential to contribute to a change in paradigm if the right stakeholders are at the table, and the planning team does not decide to use it just to achieve the bare minimum. BREEAM Communities could

be used as a supplementary tool in addition to Sweden's environmental programs and assessments, and "developer dialogue" through the *Building and Living Dialogue* process. The question of whether the BREEAM-Communities framework and its application in the Masthusen project is evidence of a shift in paradigm will be explored further in **Chapter 8: Shifting the Paradigm**.

CHAPTER 7

Ecological Urbanism and the Superblock Pilot Project in Barcelona, Spain

This chapter analyzes the 'superblock' pilot project in the medium density mixed residential and light industrial neighbourhood of Sant Martí, Barcelona. The superblock pilot project evolved in several phases, starting with a 'diagnosis' of Sant Martí's current sustainability levels using the Urban Ecology Agency of Barcelona's Ecological Urbanism framework. After this, the Ecological Framework and work of the UAEB receded more into the backdrop as the Barcelona City Council and Sant Martí District government took over the pilot project. In a highly politicized context, this chapter explores stakeholders' relationships throughout the process – a process where *conflicting interests, competition and power struggles*, different *knowledge types colliding* played defining roles, complicating the implementation of the radical superblocks concept.

Chapter 7: Ecological Urbanism and the Superblock Pilot Project in Barcelona, Spain

7.0 Overview of this chapter

This chapter analyzes the 'superblock' pilot project in the neighbourhood of Sant Martí, Barcelona. The superblock pilot project evolved in several phases, starting with a 'diagnosis' of Sant Martí's current sustainability levels using the Urban Ecology Agency of Barcelona's Ecological Urbanism framework. After this, the Ecological Framework and work of the UAEB receded more into the backdrop as the Barcelona City Council and Sant Martí District government took over the pilot project, organizing two public workshops with the local community to develop a project vision and priorities. In this sense, the neighbourhood sustainability framework in question played much less of an overall significant role in the superblock pilot project than in the EcoDistricts or BREEAM-Communities pilot projects discussed earlier in this dissertation. Next, the City Council and Sant Martí District organized a superblock pilot project simulation in September 2016, which involved the synergy of several different stakeholders. This phase was followed by appropriation by the neighbourhood, district monitoring, and urban design elements to make the project more permanent.

During two fieldwork visits to Barcelona in May-June and September 2016, eight interviews were conducted with key stakeholders involved in the various phases of the superblock pilot project. Tables 4.5 and 4.7 summarize the sources consulted for this case study, including these interviews, primary source and secondary source documents. In a highly politicized context, where a change of municipal administration – an external inhibiting factor -- occurred in the middle of the superblocks pilot approvals process, this chapter explores stakeholders' relationships throughout the process – a process where *conflicting interests, competition and power struggles*, different *knowledge types colliding*, and *the fight for democracy* – internal inhibiting factors -- have played defining roles, complicating the implementation of the radical superblock concept.

7.1 The Superblock pilot project in Barcelona, Spain

The Barcelona superblocks pilot project is a project that was initiated in 2016 and ratified by the City Council (central municipal governing body), but that has a long history. For over twenty years, Salvador Rueda and his agency, the Urban Ecology Agency of Barcelona (UAEB), have been working on the concept of the superblock, wherein motorized vehicles almost only circulate on perimeter roads on a 3 block by 3 block grid, and the interior streets in this superblock become dedicated to public space (see figure 7.1). The agency is aiming for a new plan for Barcelona whereby the whole city will operate on superblocks, and has also worked on plans in cities internationally where certain neighbourhoods follow the superblock principle. But as a singular unit, a superblock measures 9 blocks (16 hectares in Barcelona's 400 m x 400 m grid). It is a radical strategy that involves trying to alter the lifestyle of an existing fabric. In fact, it recalls Cerdá's 1863 plan, but takes it to the next level by making it live "with and for the ecosystem," beginning with a drastic mobility change (Bausells, 2016). Areas of historic El Born and Gràcia have already been turned into superblocks in 1993 and 2005, respectively, and are now some of the liveliest parts of the city (Amigo, 2016). It may therefore be argued that the vision for a city of superblocks represents a total shift in paradigm.

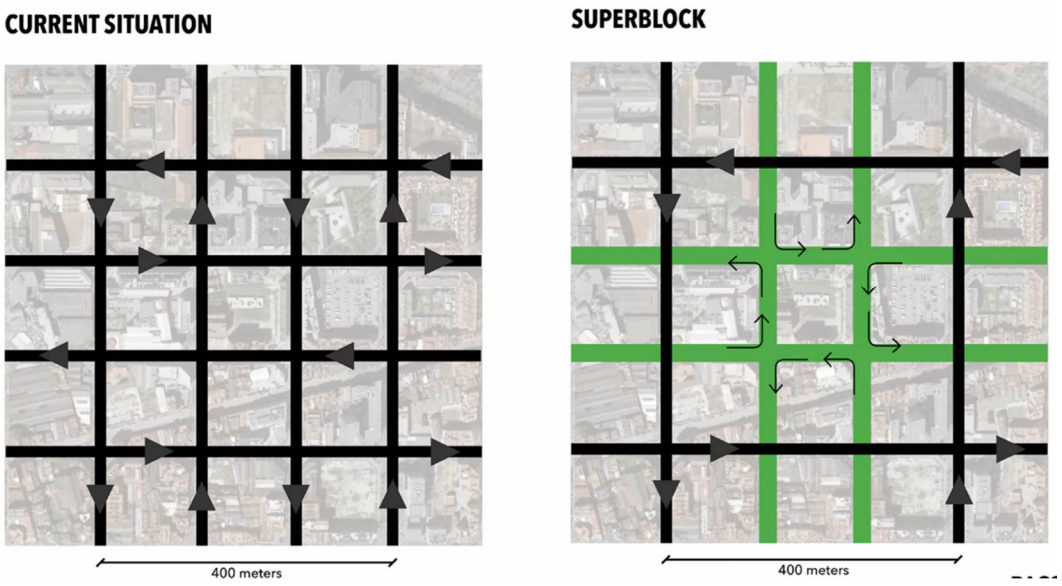


Figure 7.1: The superblocks configuration. Source: UAEB, 2016. Published with permission.

The ecological benefits of this proposal (if it were to be developed at a city-wide scale) include: reducing private vehicular traffic by 21%, converting 60% of the space occupied by cars into public space, reducing noise pollution, increasing biodiversity and bioconnectivity, increasing energy efficiency, reducing the city's 3500 deaths per year attributed to air pollution, and cutting down CO2 emissions per capita by 40%. Figure 7.2 below shows the new spaces in the superblock plan that would be dedicated to pedestrians. Bright green represents green corridors, dark turquoise represents pedestrian avenues, and light turquois represents boulevards and *ramblas.*

Figure 7.2: Space dedicated to pedestrians in the superblocks scheme. Source: UAEB, 2016. Published with permission.

The Urban Ecology Agency of Barcelona (UAEB) has also introduced its own indicator-based framework called the Ecological Urbanism Framework, which supports the implementation of superblocks. The framework is primarily a mapping-based tool that the UAEB uses internally to perform a sustainability diagnosis of a city or neighbourhood. Based on the assessment and overlay of different indicators, the UAEB is able to propose if, how, and when

superblocks should be introduced. It then uses the same framework to monitor and evaluate a project such as a superblock pilot project with the same indicators. In this sense, the framework book-ends the process: providing a holistic diagnosis in the beginning, and monitoring at the end. The framework is described more in detail in section 7.1.1..

Over the past five years or so, certain members of the City Council of Barcelona have become increasingly supportive of the superblocks scheme and helped ratify a motion that each of Barcelona's ten urban districts implement a test case – or pilot project. Four pilot projects are already underway, and in September 2016, the Sant Martí district created a three-week simulation of a superblock in a test case that involved many different actors and stakeholders in a highly synergistic, collaborative, and participative built experiment. The Sant Martí district of Barcelona is a fairly central neighbourhood that is mixed residential and light industrial, with several car dealerships and auto shops. Compared to the rest of Barcelona, it has very little "complexity" (a term the UAEB uses to describe the diversity and density of businesses and services in a given area), and strong business interests that at times conflict with the aims of the superblock. With a population of 5580 inhabitants and density of 150 dwellings/ha or 348 people/ha, it is strategically located near the 22@ district, Gloriès square, and the Rambla of Poblenou. The district has also been working on developing Pere IV street, which is adjacent to the superblock, and whose transformation has its own participatory process. This is an important street, because it joins Ciutadella park with the Besos river, cutting through the superblock site and also through Diagonal Avenue. The Sant Martí superblock follows the 3 block by 3 block scheme, forming nine blocks total (or 16 hectares), and creating four new public squares at the inner intersections of the 9 blocks, representing 8.7 ha of public space. It is thus not a neighbourhood, but forms part of the larger Sant Martí neighbourhood.

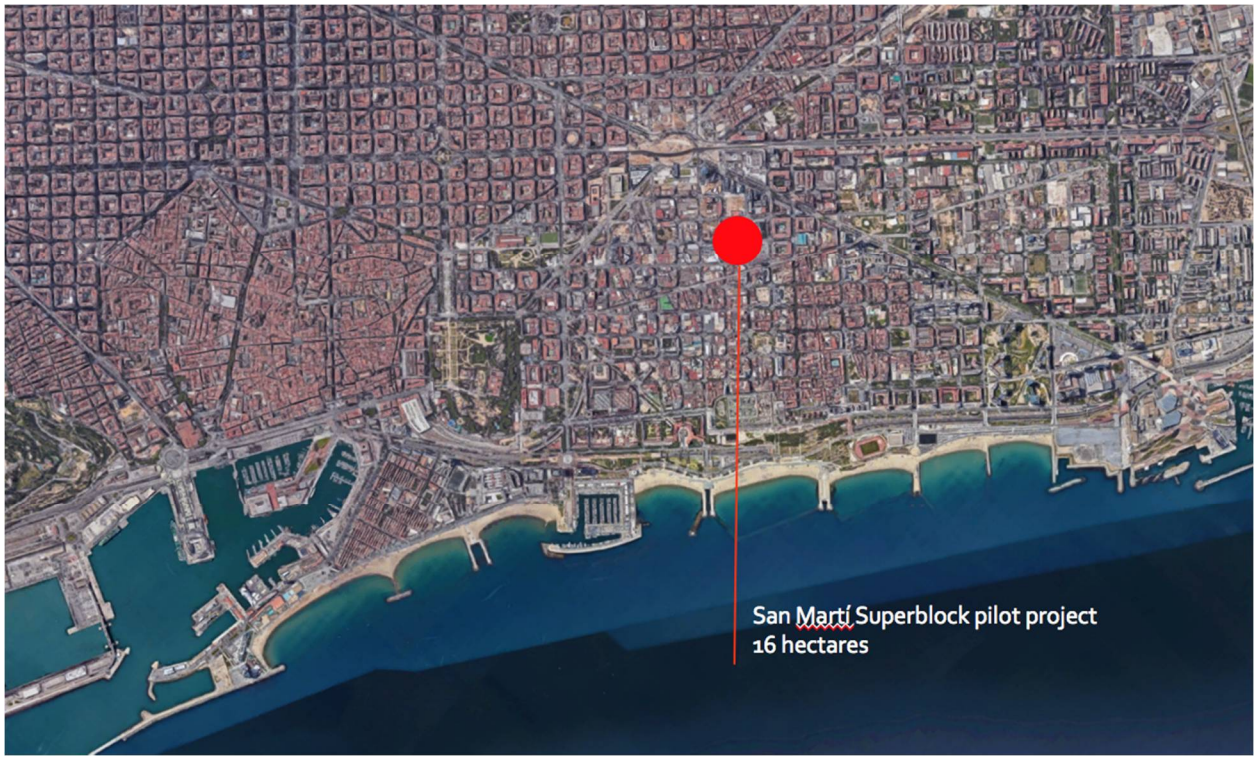


Figure 7.3: Location of the San Martí superblock pilot project. Base image from Google Maps.

Figure 7.4: Closer look at location of the San Martí superblock pilot project. Base image from Google Maps.

The pilot project has been quite controversial, and since it is such a radical proposition, it is quite sensitive to various external and internal factors. The Director of the UAEB in an interview in June 2016 explained that the superblock pilot project is highly political, and that knowing and having strong relationships with the right people is critical. He explains, "We understand that what we propose is a *process*. What we are looking for is that this process be implemented. Here, much of the work is knowing people ... Sometimes problems are solved because you know who to talk to more than because the reality is one way or another. What I want at the end of the day is for everything we do to be approved." (UAEB Director, 2016) Before delving into these factors, the next section will describe the work of the Urban Ecology Agency of Barcelona and its Ecological Urbanism Framework.

7.1.1 The Urban Ecology Agency of Barcelona and the Ecological Urbanism indicator framework

The Urban Ecology Agency of Barcelona (UAEB) is made up of a multidisciplinary team of specialists, which makes it so that each project that the UAEB works on is approached with a holistic, systemic vision (UAEB architect, 2016). The UAEB has developed its own indicator-based tool, which they call Ecological Urbanism. The tool consists of a holistic set of fifty or so indicators covering themes such as density and morphology, public space and comfort, mobility, urban organization, biodiversity, social cohesion, and urban metabolism (refer to figure 7.5), which can either be mapped using ArcGIS, or in the case of thermal comfort indicators, simulated using thermographic techniques. Certain indicators are also calculated using a formula. These indicators can be mixed and matched, depending on the context, and grouped together to form composite indicator sets such as the Urban Habitability Index. While this indicator-based framework can be used to evaluate and certify a masterplan and issue a score, the Urban Ecology Agency of Barcelona primarily uses the Ecological Urbanism tool internally to diagnose a context (before the early design phase begins) before proposing any solutions, but almost always, the solutions involve implementing superblocks or close variants to superblocks. In this way, it is not purely an assessment tool, but plays a fundamental role in helping the UAEB diagnose and frame the urban problems in question; it is a design support tool for the UAEB. Solutions here are not finalized master plans as in the case of Masthusen for example, but high-level strategies that

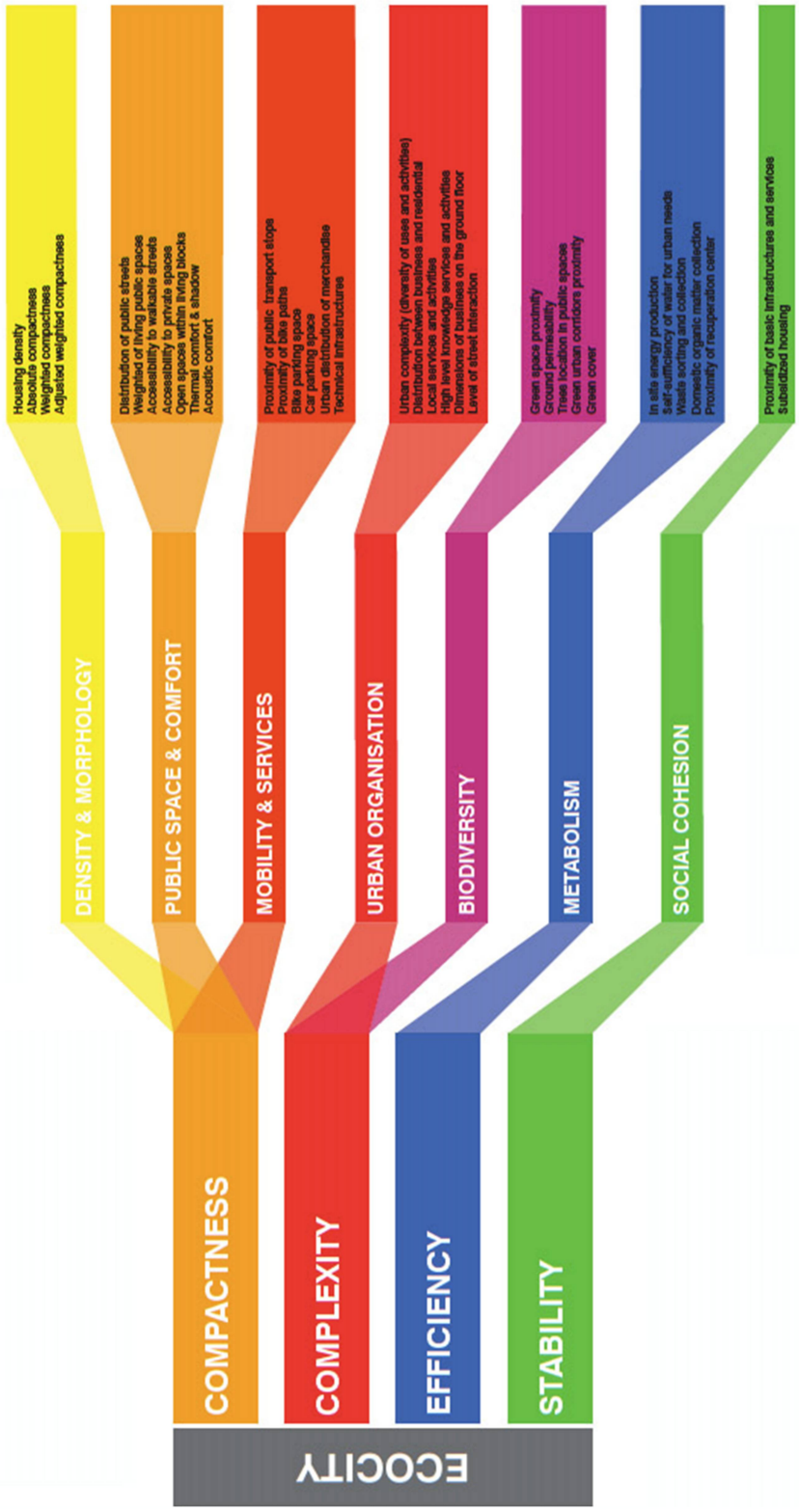


Figure 7.5: Ecological Urbanism indicator framework. Source: UAEB. Note: refer to figure 7.6 for the timeline and when the Ecological Urbanism framework was used during the superblock pilot project. Published with permission. This indicator framework is divided into four main dimensions with seven sub-dimensions. The subdimensions have performance criteria that can be calculated or mapped using GIS software. Indicators are mixed and matched to fit specific projects and can be overlayed.

leave room for community appropriation and fine-tuned design – a sometimes highly politically-charged process. As Sant Martí District Manager summarizes this perfectly: "[Ecological Urbanism] is a technical model for high level data, but also for its way and its knowledge of the city and the public administration." (Sant Martí District Manager, 2016) To summarize, the Ecological Urbanism tool involves both product and process components and is most often used by the UAEB in an iterative, and collaborative process.

Moving from diagnosis to proposal

Often, after the sustainability diagnosis is complete, the UAEB is hired to produce a type of plan that generates 'solutions' to the 'problems' uncovered in the diagnosis. A curious aspect of the UAEB is how it moves from the diagnosis phase to the proposals phase. The Director explains, "Sometimes the entry point for solutions is not easy to see. You have to work hard to start uncovering variables and to see what the solution is." As most of the indicators from the Ecological Urbanism framework are applied in the form of a map (for example a map that shows housing density or proximity to essential services), it is not obvious to an outsider how the UAEB transition from diagnosis to proposal. Is there something embedded within the framework that should be self-evident? Is it a combination of transdisciplinary collaboration in parallel with the framework? Or is it a matter of completely subjective interpretation and action?

According to the Director of the UAEB, the key to resolving problems that arise in the sustainability diagnosis is a person with synthetic thinking; a person who is able to understand complexity and interconnections. For now, he plays that role. He explains, "Normally I am. Not in all projects, but in the vast majority. That is to say, first, the project is mandated, and certain ideas have to be put on the table, and then the different parts of the team speak together. Then the next step is to work as a team, but the principles usually come from ideas that come to me in my work, in most cases. Then my team interprets these ideas and sees if they work." (UAEB Director, June 2016) The waste management team at the UAEB is quite autonomous, he explains. But for issues other than waste management, he plays a key role in translating projects from the diagnosis to proposals phases. In this way "loops and feedback processes are generated." However, he adds, "My problem is that my thinking is not linear. Do you know Sudoku? The problem is that here, the variables are not numbers, they are conditions, different realities, relationships between the elements ...There are a lot of elements - it's like a giant [Sudoku] game ..." (June 2016) "What is the limit of this approach?" he asks, "Maybe it would be myself." When probed further to explain how the agency works in a typical process, the Director responded that he could explain "how to work yes, how to make a decision, no, because every reality for me is different. But yes, it is always possible to analyze a current reality with indicators."

7.1.2 The phases of the superblock pilot project

Perhaps compared to the EcoDistricts and BREEAM-C pilot projects, the role of the neighbourhood sustainability framework in this case is relatively small. Whereas testing and applying a new framework was central in the aforementioned case studies, the Ecological Urbanism framework "book-ends" the process in the superblock pilot project. Another key difference is that the Ecological Urbanism framework was not tested for the first time in the superblock pilot project; rather this case study is more about testing the concept of the superblock than it is testing the Ecological Urbanism framework. This case therefore requires a slight reframing of the research question, and looks at the superblock case study holistically, and not just the role that the framework played in phase 1 of the pilot project (please refer to figure 7.6).

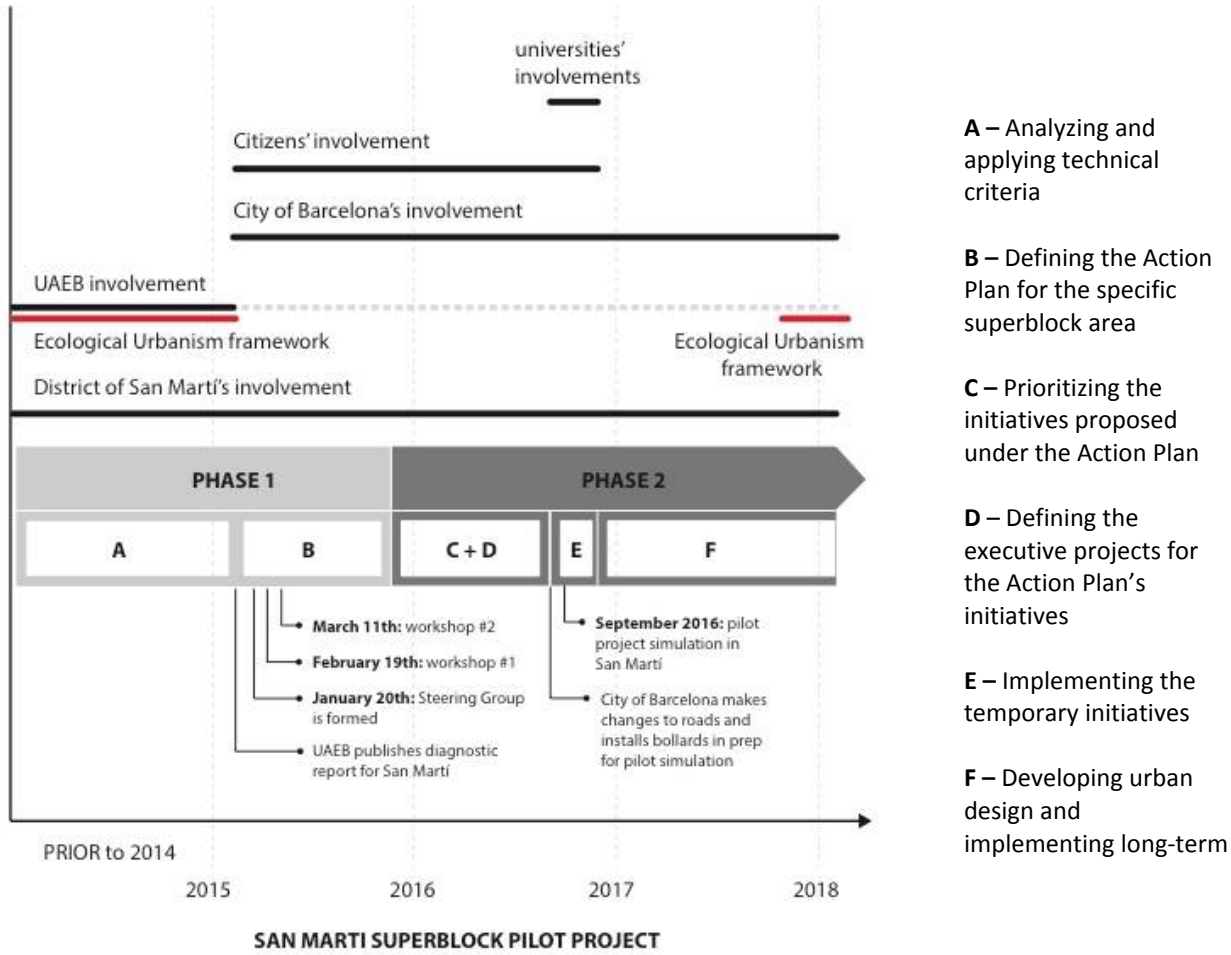


Figure 7.6: Sant Martí superblock pilot project timeline with 4 different stakeholder groups' involvement. Source: author.

The official City Council pilot project document summarizes the pilot project process in three stages. In stage 0, two workshops were held with local communities in some of the participating urban districts to decide where to locate each district pilot project. In Sant Martí, however, the Urban Ecology Agency of Barcelona worked closely with the District Manager to decide on the most strategic location and did not host workshops to this end. During this stage, the UAEB was hired to describe the area's public spaces, apply its sustainability indicators to the current conditions and provide a comprehensive evaluation using the indicators. The UAEB produced a sustainability diagnosis of the superblock site and its surrounding areas, using 32 of the Ecological Urbanism Framework indicators, and publishing the diagnosis in a report. In the end, the UAEB awarded the Sant Martí pilot project site a 54.1% or "sufficient" according to the Ecological Urbanism certification scheme. This diagnosis was then used to inform the creation of the Superblock Area Action Plan – phase 1 of the process (see figure 7.6). The Superblock Area Action Plan is the document that sets out all the initiatives proposed for each district; proposals that have come from the participatory process and which must be given priority according to technical, economic and temporary availability. According to the official City Council report, "This stage will be designed in conjunction with each district so it can be adapted to each reality, by opening the participation up to the territory's groups and collectives." (Barcelona City Council, 2016, p. 38) In this phase, two workshops were held with the local community to help the Secretariat Draft the Action Plan. Stage 2 then involved implementing the Action Plan, a stage that also involved citizen participation. The document explains, "Depending on the type of intervention, specific participatory processes will be carried out to spell out and define the details of the projects to be implemented. The promoter group [*Grupo Impulsor*] and information from the digital platform will be involved throughout the process." (ibid) Unlike the other pilots underway in 2016, the Sant Martí site hosted a simulation for three weeks in September 2016 before fully implementing the Action Plan. Amigo (2016) explains this process: "In the Poblenou [Sant Martí] pilot test, the city is starting with low impact interventions that can be easily reversed. At a later stage, changes will be made more permanent and integrated." These early "low-impact interventions" were intended to celebrate citizen empowerment and tactical urban planning (Barcelona City Council, 2016).

The nature of collaboration and the stakeholders involved also varied throughout the process. In phase 1A, the Urban Ecology Agency of Barcelona was heavily involved. Phase 1A involved internal collaboration within the UAEB, whereas the later phases involved the coordination and collaboration of a wider range of stakeholders. The following two subsections describe this collaboration in more detail.

Collaboration in phase 1

During the phase in which the District of Sant Martí hired the Urban Ecology Agency of Barcelona to do a sustainability diagnosis of the superblock site, collaboration between the District and UAEB followed a rather typical client-service provider relationship. However, it is also interesting to explore the notion of 'collaboration' internally within the Urban Ecology Agency of Barcelona. Within the UAEB, although each specialist usually is in charge of certain indicators, "[i]t is necessary to keep continuous contact," explains a senior-level architect from the UAEB; "Each person has a specialization, but we have to be in continuous contact so that everyone does not pull in one direction, but there has to be contrast so we can find solutions that fit." (UAEB architect, 2016)

According to this interview and casual conversations with other employees at the UAEB, the organizational structure is quite horizontal, with the exception of the Director. The senior-architect at the UAEB explains that this structure is not very common in Spain, since most organizations are hierarchical in structure. While the Director has his own private office, the rest of the employees sit in teams in an open-space office, where it easy to have frequent interaction among team members. On a typical project, the Director comes up with strategic guidelines and then a Project Coordinator or Manager works closely with the other teams to implement the strategic guidelines (UAEB architect, 2016), using the Ecological Urbanism indicator framework. The architect adds, "[the Director] transfers the ideas to the coordinator, or together they come up with the guidelines, and from there, the project is developed along with the diagnosis." During the diagnosis phase, different teams focus on different areas, such as energy, waste management, energy, habitability and public space, and so forth. Each of these areas have mini teams where employees sit near each other and coordinate information closely. A Project Manager then manages the ensemble of the teams.

In the Sant Martí pilot project, the UAEB did not develop a full proposal (or at least one that was made available publically). Rather, the agency worked together to apply the Ecological Urbanism indicator framework to the superblock site, and issued it a score. Applying its standard phased approach to implementing superblocks in cities, the UAEB suggested how to make mobility changes to the superblock, essentially installing bollards and repainting roads to redirect traffic through the superblock pilot project area. The agency thus plays the role of a visionary and facilitator or enabler of change, but not a designer or planner. The UAEB Director asserts, "If I think of the citizen, I come from below and I do not come from above!" (2016) and believes that while his agency can take care of design at a systems level (transportation, waste, water, air, and energy systems), the actual urban design and programming should come from the bottom up. Instead of issuing a proposal for how to develop the superblock, the City Council and Sant Martí District took over the project and decided on a three-week pilot simulation format that would involve the inhabitants of Sant Martí. Thus, in phase 2, collaboration took on a much different character, involving a complex network of stakeholders. Again, to clarify, the Ecological Urbanism Framework was no longer used in phase 2 of the pilot project, but this phase is nevertheless considered as an integral part of the pilot project.

Collaboration in phase 2

After the UAEB published its diagnostic report in January 2015, the District and City Council held 2 participatory workshops with citizens in order to develop a vision for the superblock pilot and prioritize strategies for its Action Plan. Next, in the late winter / spring of 2016, several stakeholders came together to propose a superblock simulation in the Sant Martí district. First, the CPTA, a consortium of five schools of architecture and engineering, decided to use the superblock in Sant Martí as the site for their horizontal design studio in September 2016, where students were to produce an "urban action" in an intensive one-week design studio. The professors in charge of the horizontal studio from the Universitat Internacional de Catalunya along with the UAEB Director approached the Barcelona City Council to discuss this proposal and ask for both permission and some sort of sponsorship. The City Council was supportive of this horizontal design studio taking place and decided to accelerate phase 1 of the superblock

proposal, which involved implementing new bus lines, painting the roads to redirect traffic and installing bollards to block vehicles in certain areas (UIC professor, 2016). A UIC professor recalls, “Maybe it would have happened eventually, but we sped it up so that this would happen over the summer and that it would be ready by September.” (ibid) The collaboration between these different actors that a UIC professor refers to as “a synergy between everybody” was amplified by the fact that the Sant Martí district’s annual neighbourhood festival takes place in September, and so does Barcelona’s mobility week.

A *Grupo Impluslor* (or steering group in English) was formed between neighbourhood associations, merchant associations, schools of the district and managers of public facilities – most of the different actors of the superblock – and a community participation process was initiated (President of SMNA, 2016). The people involved included: local residents, associations and groups; city associations such as UAEB; the Districts; Barcelona City Council’s Ecology, Urban Planning and Mobility team; and experts. The process is run by a Technical Secretariat that provides professional support and is made up of representatives from the Area of Urban Ecology of Barcelona City Council. The next few sections explore the roles of different stakeholders and their interests (and assets, expectations, and actions towards the pilot project).

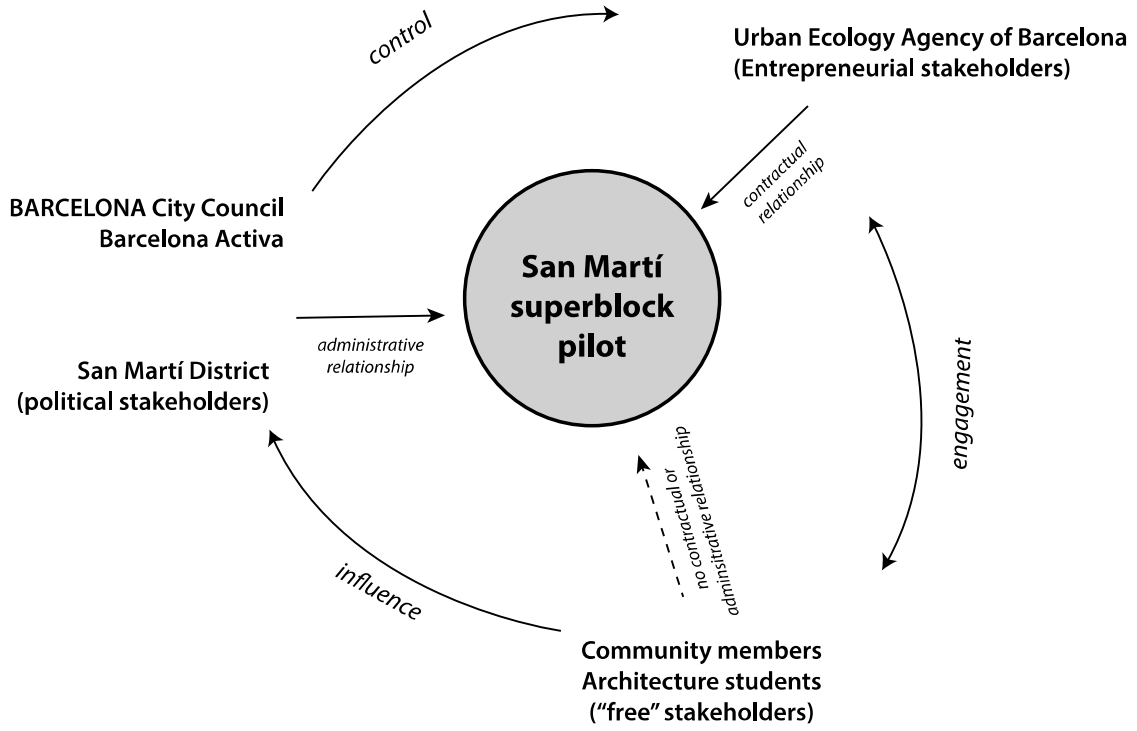


Figure 7.7.: Sociogram of Sant Martí superblock pilot project stakeholders and their relationships to the pilots. Source: author. Inspired by M.M. Raynaud, 2015. The bold text indicates the stakeholder type and the arrows the type and direction of relationships between stakeholders. The arrows pointing inwards represent the relationship that stakeholders have towards the pilot project itself.

Role of City

The City Council is the official leader of the pilot project process. It was in charge of choosing the locations for the workshops (which sometimes it did by hosting workshops with citizens, and sometimes by choosing internally). They then hired the UAEB to do a sustainability diagnosis for the sites, using the UAEB's indicator framework. The city was also in charge of organizing and hosting participation workshops with citizens and invited the UAEB to be a part of these workshops and present the concept of the superblock and preliminary sustainability analysis. The Department of Ecology, Urbanism and Mobility is in charge of supporting and promoting the superblocks pilot project process, because this department is in charge of physical aspects of the city, such as planning, land use management, urban projects, streets maintenance, parks, lighting of the city, water treatment, cleaning, etc. This department is also responsible for everything that happens in the public realm in Barcelona – that is, it is in charge of public space. This department set up a technical secretariat that promotes, leads, and drives the pilot project

process. At the time of the interview with an architect from this Department, there were four people in the technical secretariat.

Role of District

According to the architect from the City Council interviewed in the first field study, the District have a different role to play in the superblocks pilot project than the City Council. “Their role is to be connoisseurs of the territory,” she explains (City Council architect, 2016). While the City Council has departments that are specialists in city-wide subjects, the Districts manage the day-today of their territory and understand the needs and wants of the citizens.

The San Martì district was slightly different than other districts in Barcelona, because it had already contracted the Urban Ecology Agency of Barcelona to study the district and look at the potential for implementing superblocks in this area. The City Council Architect explains, “In that sense, the [Sant Martí] district has had its own life, its own rhythm “that eludes those who follow the city.” (City Council architect, 2016)

Role of UAEB

The Urban Ecology Agency of Barcelona is one of the City Council’s para-public consortiums, meaning that it receives some funding from the city, but also receives private contracts from municipalities around the globe. An architect from the City Council explains, “The Agency of Ecology in essence, belongs to the City of Barcelona. That is, it is neither a private office nor autonomous. They belong to the structure of the Barcelona City Council but with more freedom than a department. [The Department of Ecology, Urbanism and Mobility] is more involved in a whole hierarchy of relationships and they are more autonomous.” (2016) Although each project is different, the UAEB usually conducts a sustainability diagnosis along 4 axes: complexity, compactness, efficiency, and stability / social cohesion (ibid).

Role of citizens / neighbourhood associations

Citizens play a very important role in the superblock pilot project. The City Council architect emphasizes the importance of their involvement in the process, because the intention

is to reorganize (both functionally and physically) public space, which will affect citizens' everyday habits. With the implementation of superblocks in Barcelona, citizens will have to take more public transit than before, but will be able to have their meals on the streets in the public realm, which would not have been imaginable prior to the superblocks (City Council architect). The City Council architect further emphasizes, "Therefore, if there is no citizen consensus where the citizens see the benefits of this change, we will not get anywhere." Within the category of citizens are the neighbourhood associations, such as the Sant Martí Neighbourhood Association. The president of the SMNA explains that their organization is sort of an intermediary, having contact with the people, the neighbourhood, the territory, the media, and so forth (President of SMNA, 2016).

Role of students / professors in the simulation (and Consortium of architecture schools or CPTA)

Architecture students and professors were only involved in the pilot project simulation phase of the pilot project phase, or in other words, in September 2016. During this month, a consortium of five architecture schools (called the CPTA in Spanish) held a 'horizontal workshop' to kick-off the semester. For the 2016 studio, they decided to use the Sant Martí pilot project as their intervention site. The role of students and professors in the pilot project simulation was to design temporary installations for the 4 public squares at each major street intersection. They were simultaneously asked to use recycled materials and to try to source them and fabricate their installations locally. They were also encouraged to interact with neighbours to get ideas for their projects and to help install them.

While it is hard to deny the breadth of stakeholders involved in the superblock simulation, what is unusual about it is that no private design consultants were involved in the initial planning of the superblocks, but architecture students, their professors and city architects were all involved at various points. The urban ecology agency collaborated with two levels of government and the community, and the design consultants were not brought in until much later in the game, once interventions had already been tested. Figure 7.8 below summarizes the three main stakeholder groups' momentum over time. But as the next section explains, several external factors inhibited a smooth process.

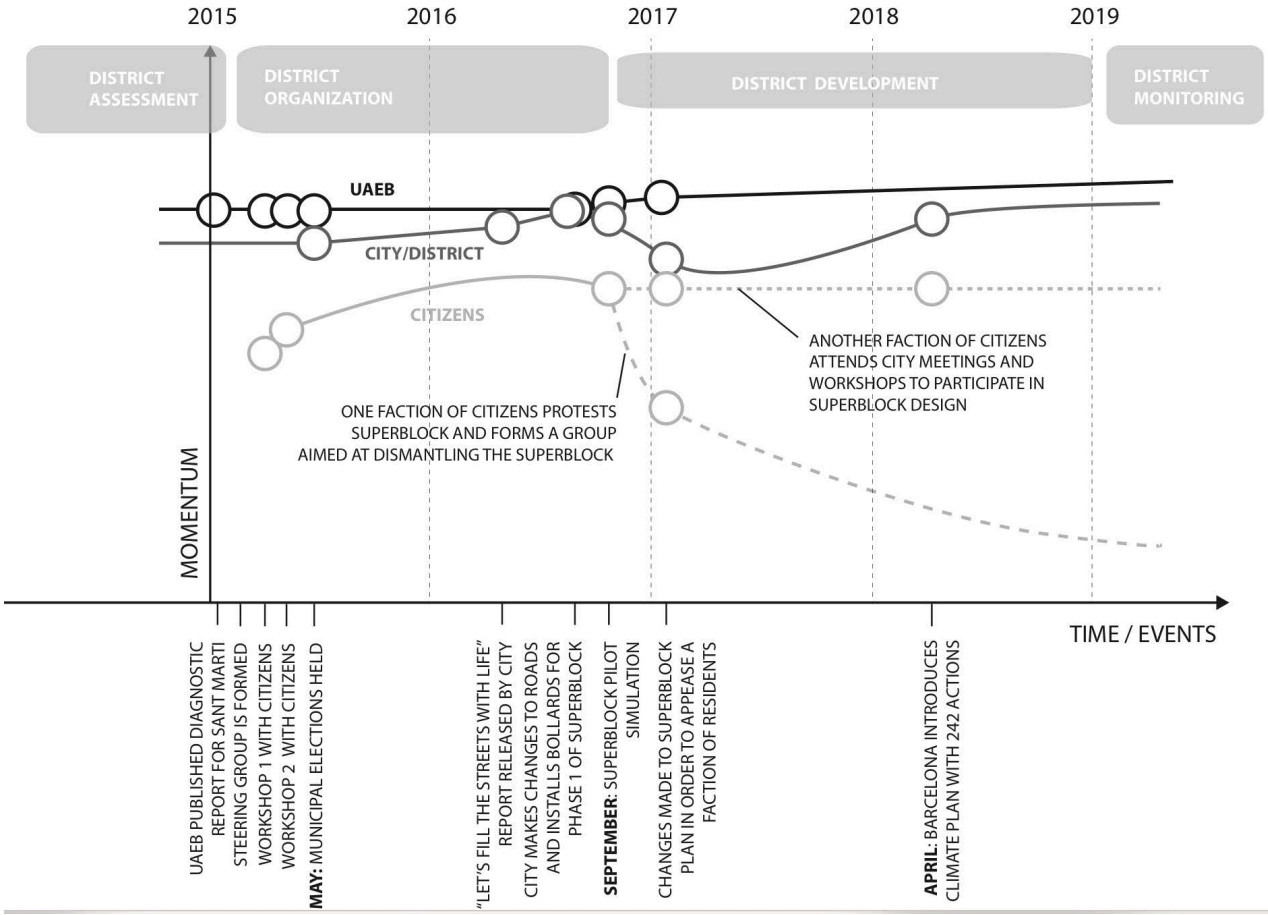


Figure 7.8: The momentum of different stakeholder groups over time. Source: author. The diagram shows how the Urban Ecology Agency of Barcelona's momentum is maintained over time, and even increases slightly once the pilot project begins. The City's momentum increases in the early phases as it sees an important branding opportunity, but falters after the bad press and criticism for lack of a democratic process. Citizens' momentum splits off, as certain embrace the superblock concept and become involved in its appropriation, while others vehemently oppose it and try to put an end to the pilot project.

7.2 Barcelona's planning context: external inhibiting and enabling factors for the superblock pilot project

Several authors have written about Barcelona's transition to democracy in the 1970s after the death of Franco in 1975 and the impact this had on long-term urban planning. In the late 1960s in Spain, urban movements had begun to organize, where citizens demanded the public facilities that were missing in their neighbourhoods. Urban social movements of the 1960s and 1970s set the stage for certain elements that are now characteristic of Barcelona's urban planning model. First, the new public spaces in the decade after Franco's death were designed by interdisciplinary teams made up of engineers, architects, and artists (Acebillo, 2006). Second, they reinforced Barcelona's identity as an international laboratory for urban design (ibid). And third, they set the stage for a very involved citizenry ready to fight for the right to the city.

7.2.1 The 'Barcelona model' of urban planning and urban governance and external contributing factors to the superblock pilot project

According to several authors (C. Marshall & Rossman; T. Marshall, 2000), Barcelona has become well-known in Europe for its ambitious planning and urban regeneration programs under the leadership of Barcelona's City Council (T. Marshall, 2000). According to Marshall (2000), Barcelona is perceived in Europe as a "leader in the practice of trying to adapt to the pressures and opportunities of globalization," which include urban regeneration, economic promotion and governance processes (ibid, p. 299). Some scholars even claim that there is a 'Barcelona model' of urban planning that has a unique approach to urban governance (Acebillo, 2006; Blanco et al., 2016; T. Marshall, 2000, 2004) that is based on integrated governance, collaboration, public participation, and inclusivity:

- *Integrated governance*: Planning functions in Barcelona are spread between the City Council, the GMO, and the *Generalitat,* which is the government of the autonomous region of Catalonia. Another important governance element in Barcelona is its decentralized governance model, where the City Council is divided into sector-specific managers (for example resource management, tourism, housing, and so forth) as well as District Managers for each of its ten urban districts. Each district has its own smaller council, and it is responsible for more specialized knowledge about the district (City Council architect, 2016), and areas such as urban planning and infrastructure.
- *Collaborative governance:* Barcelona is recognized for the "joint operation of plans, instruments and projects based on a continuous dialectic … that is interdisciplinary (integration of architecture, urban planning and infrastructure)" (Marshall, 2000) and for tight collaboration between politicians, professionals, and citizens (as will be demonstrated in the superblock pilot project in this chapter). In this sense, urban planning in Barcelona can be said to be "relatively open and collaborative, but expert-led." (ibid, p. 306)
- *Public Engagement:* Barcelona is also a city known for its social activism and civic engagement. As the website TransGob states, "In the specific field of citizen participation,

Barcelona stands out as a city with very significant levels of social activism. Neighbourhood associations are a key player in the neighbourhoods, and there exists a myriad of social and cultural organizations all across the city." (Blanco et al., 2016) The City Council has implemented various mechanisms since the 1980s to engage the public, such as consultative forums both at the district and city levels, community development plans, citizen agreements in the area of social inclusion and sustainability, and participatory processes for the design of urban redevelopment projects (ibid).

- *Inclusivity:* According to the City of Barcelona website, there are over 500 organizations in Barcelona dedicated to making it a more inclusive city. Moreover, there are also several direct platforms from which citizens can participate, such as the City Council's website on Democratic City, which then links to three other websites and programs. *Decidim Barcelona,* for instance, is a centralized online platform created and managed by the City that aims to help build a more open, collaborative, and transparent city (Decidim Barcelona). From this platform, citizens can engage in public meetings, debates, get involved in proposals, post comments, and share ideas.

While these characteristics of the 'Barcelona model' arguably foster a positive climate for the superblock pilot project, it is also important to note that the motives and political orientation for implementing superblocks in Barcelona have changed over time. The Urban Ecology Agency of Barcelona had been trying to convince the City administration for many years to implement superblocks, and it was not until the centre-right leadership of mayor Xavier Trias (2011-2015) who approved the superblocks proposal once the new Urban Mobility Plan was passed in 2015. However, in 2015, Barcelona elected mayor Ada Colau from the *Barcelona en Comú* party, a radical left party with a progressive agenda and ambitions to rearrange political power relations and develop public policy based on residents' quality of life and affordability (Klause, 2018). This change in leadership acted as an important external inhibiting factor, as it happened in the middle of the pilot project approvals process. A City Council architect explains:

> One of the most important phases in a radical change process is consensus; internal and external consensus, because if the politicians are telling you one thing and the other technicians and experts are telling you another and there is no way to clarify, you can hardly give a clear message or convince anyone. I

> would say that this past year we have been in this mess, in this mess between experts, politicians, and so forth. As there has been a change of politicians, so how to act with the neighbours and the citizens is very delicate at the moment. What message do you give them? (2016)

She continues, "I would tell you that the difference between the previous [Trias] legislature and now [Colau's leadership], is that in the previous one, we considered it very important to start with public consultation. And we almost started doing open work sessions with the neighbours; at that time, there were only four places where we wanted to do a test… They were four very limited sites. And we started as if to say, "hey, the slate is clean. We do not have preconceived ideas," and we started doing work sessions with the neighbours, and brainstorming -- evidently stating the objectives of the program to improve public space, increased green and biodiversity, traffic management and such, but to see what people had to say." (City Council architect, 2016) This change in administration was accompanied by a complete change in community participation strategy, and new relationships had to be built between all the project actors. Moreover, Colau's administration decided to change the location of the Sant Martí superblock to a few blocks over so that nobody could claim that it was the former Mayor Trias' project. This change in administration in the middle of the approval process for and launching of the ten pilot projects created chaos and uncertainty.

In addition to this change in participation strategy, it led to an ideological tug of war as Colau's administration was eager to take credit for this project and push its own agenda (Klause, 2018). According to Klause, (2018), this was an important structural barrier to implementation. Moreover, it led to several implementation shortcomings, since the Colau administration was in a rush to implement the superblock pilot project within its legislative period of four years. It therefore did not spend the time engaging the local community and building consensus. It also led to further polarization of the population since any right-wing parties and party supporters were automatically against the project, given that it was coming from Colau's radical left party. Colau's administration's branding of the superblock project as their own deepened these ideological divides, since citizens identify the project as the 'superblocks of Colau,' rather than simply 'the superblocks of Barcelona' (Klause, 2018). But in addition to this external inhibiting factor, several internal inhibiting factors also negatively impacted the pilot project process.

7.3 Stakeholder relations in the Sant Martí pilot project

One thing that the UAEB Director often repeats is that Barcelona's context "is not ready" or "is not prepared" for the radical superblock concept. Implementing such a radical project attracts much attention to politicians by citizens, who have very mixed reactions to the pilot project. Moreover, as this next section explains, there are perhaps too many cooks in the kitchen to omplement the pilot project smoothly. Conflicting stakeholder interests, the UAEB's paradoxical role, overlapping roles between the UAEB and City departments, and different types of knowledge colliding were identified by interviewees as internal inhibiting factors to the process.

7.3.1 A paradoxical role for the Urban Ecology Agency of Barcelona

Interviews with stakeholders involved in the superblock pilot project suggest that the Urban Ecology Agency of Barcelona perhaps has a paradoxical role to play in Barcelona, or that its identity is poorly understood or poorly managed by the city. The UAEB is the mastermind of the superblock concept; however, the implementation of superblocks depends on other City departments. Some city departments criticize the UAEB's work on the superblock for being too expert-driven and for lacking a connection with the local community. For instance, an architect from the City Council explains that the UAEB's diagnostic report for Sant Marti "might go one step beyond defining pure theory," but has "not yet been worked with the people, nor with the districts… there has not yet been participation, so the plan cannot be so knowledgeable of the territory." (2016) From her perspective, the UAEB's superblock proposal for Sant Martí was still "a very theoretical implementation model." Paradoxically, however, she also explains, "We have sort of an obligation to feed this agency, and therefore things that the agency can do, we have to commission them to do. Then, for example, with the superblocks, we have to ask the agency to do the diagnosis, to do the study and such. But the agency itself is unable to have internal communication relations and knowledge of the territory, the problems of planning, the maintenance of the streets, and it has no relationship with the public. The relationship with the public, they cannot do" (2016) for political and jurisdictional reasons since the City departments

and districts are charged with relations with the public. The president of the Sant Martí neighbourhood association (SMNA) similarly remarks, “The name UAEB is very large and you might think that the agency serves the citizen, but it does not. It serves the administrations and it works on large projects, it works for Barcelona and for other cities of the world.” (2016) Another member of the SMNA adds that the UAEB is a consultancy agency, but “citizens do not see it as an entity to consult.” (member of SMNA, 2016) There is therefore clearly a disconnect between the scope of the mandate given to the UAEB by the City administration (which does not include communication with the public or any form of consultation or participation) and the expectations that the departments place on the UAEB in practice in terms of them being ‘distanced’ from on-the-ground happenings.

7.3.2 Conflicting interests between the District, the UAEB and the neighbourhood association

With such a wide range of actors involved in the pilot project, it is no surprise that there were varying interests at play. Drawing from the same stakeholder diagram from previous chapters in this dissertation, figure 7.9 maps the assets, actions, and expectations of the four major stakeholder groups (although the Sant Martí District and City of Barcelona are grouped together) and shows the areas where there was conflict or the potential for conflict. Indeed, each stakeholder group had their own priorities: for the City and District, it was to meet sustainability targets and to create dynamic public space (City of Barcelona website); for the Urban Ecology Agency of Barcelona, it was for the pilot project to be considered successful and for the concept of the ‘superblock’ to take hold (UAEB Director, 2016); and for the citizens, there were likely many differing visions and priorities. The president of the Sant Martí Neighbourhood Association (SMNA) explained that citizens want to win back public space and will usually support projects that involve giving more public space to the citizen. An example of this was removing an abandoned substation in Sant Martí, where the SMNA president says, “That transforming substation is occupying a space that is qualified as green, so removing it meant gaining that green space, and everyone agrees with that.” (president of SMNA, May 2016). It is important to note, however, that even the SMNA represents on faction of interests in a complex, mixed neighbourhood. One interviewee mentioned that in Barcelona, neighbourhood associations

generally attract very left-wing, more intellectual type of citizens. Their views do not necessarily adequately encapsulate the views of the whole neighbourhood. So when the SMNA president represents that Sant Martí "must take important steps towards energy efficiency and sustainable mobility," he is not speaking for everyone. For instance, many baby boomers want to have a car and to have the right to use a car freely. Indeed, these differing expectations of the pilot project and what benefits it should bring and for whom, alongside unclear and overlapping stakeholder roles, led to certain tensions in the pilot project, which are described in section 7.3.4.

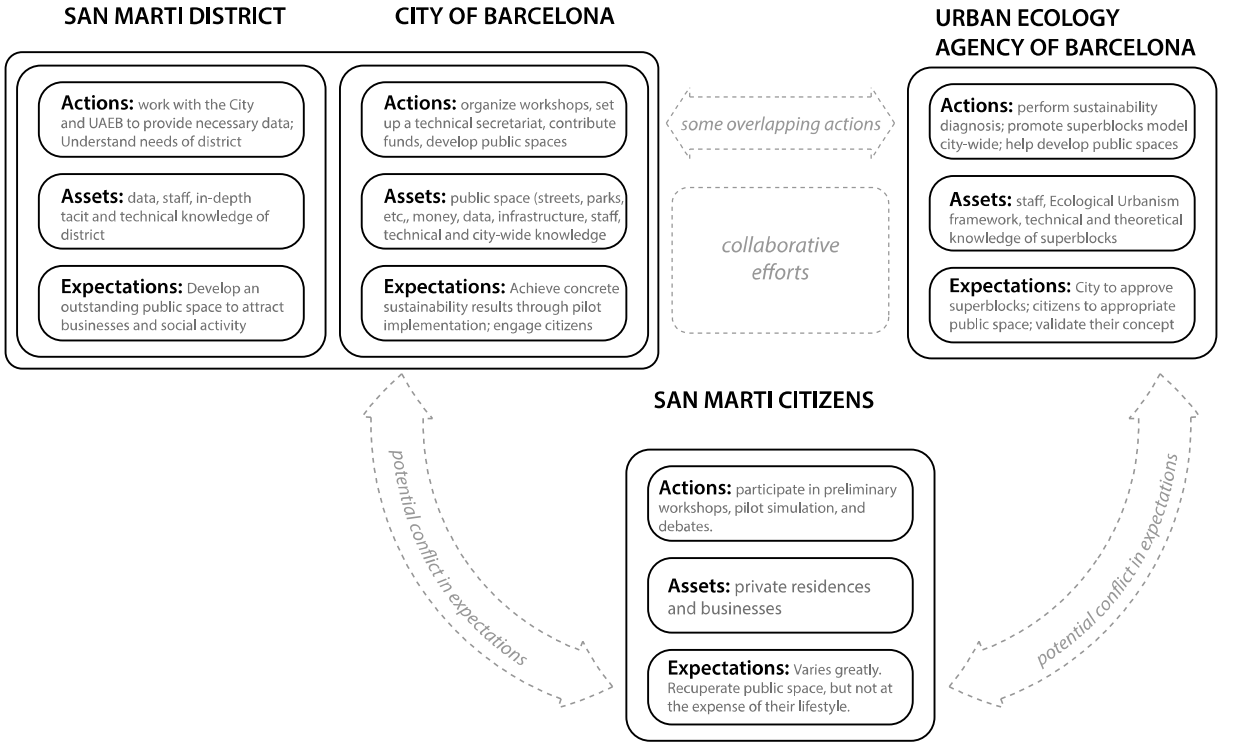


Figure 7.9: Relationships between stakeholders in the Sant Martí pilot project. The Sant Martí District and City of Barcelona are grouped together to act as a political stakeholder. The political stakeholder's and UAEB's (entrepreneurial stakeholder) assets and expectations are aligned, leading to collaborative efforts; however, the overlapping actions of both lead to tension. The citizens (free stakeholders), on the other hand, have potentially differing or even conflicting expectations of the superblock pilot project with the political and entrepreneurial stakeholder. Source: author.

7.3.3 Overlapping or unclear stakeholder roles

A few interviewees explained that the UAEB played a much more active role in the Sant Martí superblock than the other superblock pilots underway (San Martí District Manager; City Council architect; etc). However, the heavy involvement of the UAEB in this pilot caused some friction with other stakeholder groups. Interviews with some of the stakeholders involved in the

pilot project revealed overlapping and unclear stakeholder roles specifically with respect to the Urban Ecology Agency of Barcelona and the Sant Martí Neighbourhood Association. In the case of the UAEB, it is a para-public consortium that is part of the City, but at arm's length from the city, and some City departments feel there is an overlap between its functions and their own functions. Specifically, the department of Ecology, Urbanism and Mobility overlaps heavily in terms of the themes they deal with the UAEB, but they have differing levels of capacity. Moreover, the UAEB has a team of 50 or so people, whereas the department of Ecology, Urbanism and Mobility has a smaller team, and the technical working group, only 4 people. Although interviewees were not specific, it was suggested that the UAEB played the role that the Department of Ecology, Urbanism, and Mobility would usually play.

From the Urban Ecology Agency of Barcelona's perspective, there is a sort of unspoken competition between the UAEB and certain City departments. One interviewee from the UAEB explains, "As [the City] has competition, they have to be the ones who do the job, who are the protagonists. But they are not. In this phase, we are, but it cannot *appear* that way…" (UAEB employee, 2016) The interviewee then added that egos played a certain role, and that the City has the power to give or withhold prestige from the UAEB. The UAEB Director even goes so far as to say that jealousy on the part of City technicians is a major impediment to the process (2016). A concrete example of this tension is the UAEB's new mobility plan including a new, much more efficient orthogonal bus route system. The new mobility plan has taken a very long time to implement because of this 'competition' between the UAEB and other City departments or organizations. The Director of the UAEB explains that there are 50 engineers who work for the transport authority in Barcelona, "so what will they say to an agency that is not even a transport agency… how are we going to tell them what to do?" (2016) In contrast to the roadblocks encountered in Barcelona, the agency quite easily implemented a new mobility plan in the city of Vitoria in Spain. The director attributes this to a much less refractory governance in Vitoria.

In addition to City stakeholders and the UAEB, citizens and citizen-led organizations such as the Sant Martí Neighbourhood Association (SMNA) appeared not to have a clear understanding of their roles. The president of the association explains, "We as an association are

still not very clear about our role, or the implementation tools that we will need in order to be able to handle this." (President of SMNA, 2016) He further insisted that to implement the superblocks, "some intermediary steps are needed to get there." (President of the SMNA, 2016)

7.3.4 Different types of stakeholder knowledge colliding

A second type of tension that arose in the superblock pilot project process was a tension between different types of knowledge: theoretical knowledge, technical knowledge, and citizen (Layzer) knowledge. This became apparent in interviews with a few of the different key stakeholders. An interviewee from Barcelona's City Council explained, "This is a struggle, the problem between politicians, technicians and experts or theoreticians, and it is a complicated struggle too." (2016) She then further explained that technicians are stakeholders with specific knowledge and who work for the City departments or districts, and experts or theoreticians are those with more expert knowledge, coming from outside the city departments.

A struggle between technicians and experts exists between some of the City departments and the Urban Ecology Agency of Barcelona. This Barcelona City Council architect, for instance, argued that the Urban Ecology Agency of Barcelona has a very theoretical approach, detached from the everyday life of citizens. She explains, "When [the UAEB] was created 25 years ago, it was because it was an office for undertaking studies. It's like saying, hey, we take some of the most experienced technicians, and we leave them alone, detached from reality, detached from the day to day, from problems with maintenance, from problems with neighbours, and we leave them there in this laboratory so that they can think quietly about where things can go." At the same time, the City departments do not have the staff or the funding to spend time "theorizing." An architect from the Department of Ecology, Urbanism and Mobility exclaims, "We cannot theorize excessively because we do not have time for it! [The UAEB Director] has a team of 20 people doing field studies and such ... I am alone. What theorization can I do? I do not have the capacity to be thinking about the subject!" On the contrary, the 'technicians' at the City departments have more specialized knowledge of the different districts (the City architect gives examples of what is worth doing to a street, and the complications involved in demolishing anything in the city (City Council architect, 2016).

For certain interviewees, the “theoretical knowledge” of the Urban Ecology Agency of Barcelona is perceived as a limitation. For instance, an interviewee from the City Council said that she had read the UAEB’s diagnostic report of January 2015 and insinuated that it was quite ‘top-down’ since it is a purely expert-driven report with no feedback from the local community (City Council architect, 2016). An interviewee from the SMNA echoed that sometimes the citizens do not want the same things as the technical experts; for instance, the technical experts may recommend planting certain types of trees to increase biodiversity, but the citizens may respond, “No, we do not want this type of tree.” (President of SMNA, 2016)

In the end though, the interviewee from the City department says that both types of knowledge (‘technical’ and ‘theoretical’) is necessary: “In order to get all this to work, we need to have both: we need to have theory, and I would never do without this, and try to make the functional theoretical model as respected as possible and not be a disaster; but you should know how to match the theory to each physical and social morphology of each city and each neighborhood.” When asking the Director of the UAEB what the relationship should be between different knowledge types, his response was: “In each case it is different. It depends on the citizens, it depends on the technicians. It depends on politicians. It depends, each one is different.” (2016)

Figure 7.10 illustrates the impacts of different types of knowledge colliding. First, technical knowledge from the City departments collide with theoretical knowledge from the Urban Ecology Agency of Barcelona to create competition and friction in the pilot project process. The collision of technical and lay knowledge (from citizens) create a power struggle where many citizens pointed to a lack of democracy in the early planning process. Theoretical and lay knowledge remain at arm’s length from each other in this scheme.

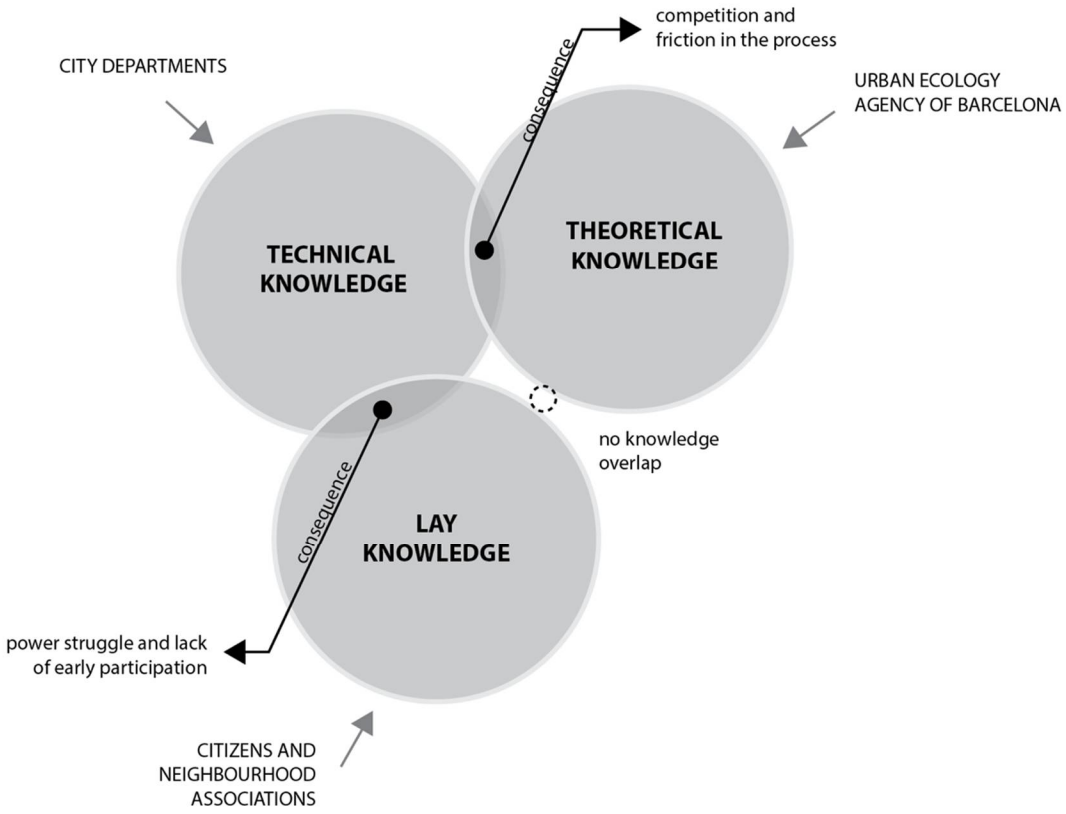


Figure 7.10: Different types of knowledge colliding. Source: author. The grey circles represent the spheres of knowledge, and outside these spheres, the stakeholder groups who bring this type of knowledge to the project. The dark black arrows originating from the areas of overlap indicate the consequences of such overlap.

7.3.5 Reflections about stakeholder management in the superblock pilot project

Barcelona's superblock pilot project in Sant Martí brought together a very wide range of stakeholders, and through many different phases. It started with the district of Sant Martí hiring the Urban Ecology Agency of Barcelona to do a diagnosis of the district and develop a proposal for the superblock concept. But its implementation could not have happened without the support for the City administration, which ratified an agreement to develop superblock pilot projects in each of Barcelona's ten districts.

Barcelona's superblock pilot project is a radical urban transformation, and it is therefore very unsurprising that different stakeholders have different agendas. Drawing from Raynaud's (2015) stakeholder model, this section described how potential conflict can arise from differing expectations among the major stakeholders. In this way, various stakeholder interests conflict as solutions are negotiated over this urban spatial transformation.

The roles of different stakeholders were also analyzed, and interviews with key stakeholders revealed sometimes ambiguous and overlapping stakeholder roles between the City's Department of Ecology, Urbanism and Mobility on the one hand, and the at-arms-length consortium of the Urban Ecology Agency of Barcelona. These two bodies sometimes have similar roles, but different mandates, different levels of capacity, and different levels of power, which can lead to a power struggle between stakeholders. In the Sant Martí neighbourhood in particular, the UAEB played a more active role than usual, which could appear as 'overstepping' into the Department of Ecology, Urbanism and Mobility's mandated scope. At the same time of overlapping, uncertain roles for these two stakeholder groups, certain actors from the Sant Martí Neighbourhood Association suggested the need for a *new* stakeholder group to act as an intermediary between the politicians, technical experts, and citizens. From their perspective, there is still a disconnect between the top-down and bottom-up, and the UAEB cannot fill this gap since it is still officially part of the municipal government structure. This intermediary organization could also help the superblock live on after the pilot project process and have a managerial role.

Finally, interviews also revealed a conflict between different types of knowledge, but in particular between technical and theoretical knowledge. Certain actors from the City departments felt that the UAEB's work is too theoretical and detached from reality on the ground in the different neighbourhoods. Whether this criticism can be justified can be questioned, however, since community participation is outside of the UAEB's assigned mandate. It is in fact the City departments and Districts that are in charge of community participation. Perhaps stronger lines of communication and collaboration between the UAEB and the city departments could strengthen pilot projects in Barcelona the future. But what about the role of community participation?

7.4 Community participation in the pilot project

In May, 2016, the Barcelona City Council announced in its report *Let's Fill the Streets with Life* that "open and inclusive participation will be promoted, encouraging the involvement of

associations, people on an individual level, facilities and the various groups involved in each of the territories: the elderly; children and youth; retailers etc." (p. 37) The same report states,

> These first initiatives are intended to be carried out under two major lines of work: citizen empowerment and tactical urban planning….A participatory process has been designed that is intended to accompany the entire deployment of the measures to be implemented, seeking at all times the involvement and joint responsibility of the social fabric of each area….That way city residents can quickly reclaim streets and see for themselves whether or not the model is working. (p. 21)

But how well-timed, effective, and genuine has community participation been in the pilot project? As mentioned at the beginning of this chapter, community participation has been a very charged topic in Barcelona since the 1960s and 70s. It has been quite central in the Sant Martí superblock pilot project; however, it is important to ask whether community participation was introduced at the right time. The decision to implement pilot projects in each of the ten urban districts in Barcelona was something that was negotiated between politicians and the UAEB, and not something that was negotiated with the public. Moreover, the location for each of the ten pilot projects was sometimes, but not always, negotiated with the public. In Sant Martí, the superblock location was decided on behind closed doors at the Sant Martí District.

Before the superblock simulation in September, several community workshops were held in Sant Martí and the three other districts who are beginning to develop their pilot projects (see phase 1B in figure 7.7). In the first community workshop, participants were asked what their ideal vision of the superblock would be. All proposals were collected and analyzed, and then in the next session, the City came back to the residents and arranged the proposals by topic and reviewed them and discussed which were viable or not. The third workshop then prioritized proposals so that the City could know how much money they would need and whether they would go for one idea over the other (City Council architect, 2016). According to the President of the SMNA and another one of its members, there were about 30 to 60 participants in each workshop. The President of the SMNA says he believes that the workshops were "a type of participatory process designed as a first contact and a first debate with the people, but it was lacking in the sense that it needed to be deeper, because in the end, the superblocks project contains many elements that are very technical, very specific in various disciplines, in terms of

mobility, in terms of energy, in terms of the use of public space or redesign of public space, in terms of trade in economic activities." (President of SMNA, 2016) He adds that there should have been other "specific workshop sessions" on topics deemed important by the community where they could have dug deeper on the issue.

The superblocks simulation in September 2016 was a collaborative and participative effort with temporary installations so that residents and workers in Sant Martí could interact with space and openly discuss what they want and do not want for the eventually permanent superblock. It was a co-learning exercise that brought dialogue out of the hands of pure experts and different levels of government to the streets and into the hands of citizens. A student from the Universidad Internacional de Catalunya, explains, "Neighbourhood associations and different neighbourhood entities and institutions came to say what they preferred, but not all neighbours were represented… the neighbourhood entities only see benefits and neighbours only see discomforts such as construction work, etc.." (UIC student, 2016)

In fact, residents were invited to help with the students' installations. The UIC student's group, for example, created stencils with Barcelona's graphic symbol, and residents were invited to use the stencil to paint on the streets and walls. The students posted flyers around the neighbourhood to invite residents. The UIC student recalls, "Sometimes they came downstairs, for example one day a retired man who was a carpenter came downstairs and…helped us, and there were parents who came with children who helped us to paint and collaborate and it was like an activity for the children." (ibid)

7.4.1 How do residents and businesses feel about the superblock pilot project?

"Those who are affected, or who benefit, depending on how one looks at it, complain about *how*, *when*, and *where*," explains Márquez Daniel (2016). During three public debates held inside the superblock in one of the public squares during the superblock simulation (see figures 7.11 and 7.12), several residents voiced their anger about having the superblock. Some felt that the new bus lines were a nuisance, and were frustrated by the new circulation routes. Others felt an inherent sense of inequality between those residents on the interior of the superblock and those on the periphery, and those on the periphery felt concerned about increased traffic and

noise, some of them coining the term *afectado perimetral* (a perimeter-affected person). For instance, one perimeter-affected person remarked in an interview with *El Periodico*, "The supposed good of some should not be the curse of others. It's unnecessary and harmful." (Márquez Daniel, 2016) Others voiced concerns about logistics within the superblock, such as how stores would get their deliveries, how fire trucks would navigate the superblock, and if residents would still receive their mail easily. The news sensationalized a story of a bus getting stuck inside the superblock and not having enough of a turning radius to get past the newly installed bollards. And finally, many felt that they had not been given the choice to have the superblock and were not properly consulted. Indeed, according to Amigo (2016), "a common complaint is about the lack of a real participative process with residents." But as the UAEB Director points out, that is what the public debate is about. It's a democratic way for residents to be heard and feel a sense of legitimacy (Innis & Booher) so that everybody in this process can learn together. Since the pilot project is in a testing phase, the residents have a lot of room to customize it and appropriate it to make it their own, before going back to the drawing board.

Figure 7.11: Photograph of one of the public debates. Source: author.

Figure 7.12: The opinion board installed during the pilot simulation in September 2016. Source: author.

During the pilot simulation, an opinion board was installed in one of the new public squares. Each of the 120 comments were photographed, transcribed, and translated into English (although approximately 25% of the comments were illegible because of water damage or illegible handwriting). Figure 7.13 summarizes the results of these opinions: 31% of comments posted on the opinion board were positive, and of this 31%, approximately two-thirds of positive feedback was concerning pedestrian space or public space. For example, one resident wrote, "The streets are returning to the citizen # superblock" and another wrote, "Long live the superblock! Congratulations! What a gift! Streets for people! The change of a 4-lane street of circulation to what it is now is incredible. Silence, peace, trees." Another 23% of positive feedback were generic comments such as "I like this initiative, good work!" and another 7% concerned transportation.

A rather large percentage of feedback – 44% -- was negative, however. Of this negative feedback, approximately one-third of comments had to do with community participation, democracy, and lack thereof. Residents wrote things such as, "I still do not understand ... no democratic consultation...", "So this is how the future Catalan republic will be? Where is the consultation to the neighbourhood? More democracy!" and "Hipsterism led to paroxysm, pure

despotism, "illustrated" everything for the neighborhood but without the people of the neighborhood." Another quarter of this negative feedback concerned disrupted mobility patterns. For instance, one resident complained: "I'm an affected person. Before, it was a quiet street. Now 10 bus lines pass by (from 5 to 6 am on average 20 buses). A taxi driver complained that he or she could not work in these conditions. It's impossible to live with so much noise and contamination. Out with the superblock!" And still others complained of too much traffic and noise on the main arteries and of the impacts that the pilot project had on businesses. Locals complained, "Worse cannot be done. Has anyone thought of the shops?" and "We are outraged by the superblock. The poor companies are the ones that are really hurt, since they bring in fewer clients and the poor transporters cannot even deliver their services." In fact, one group of neighbours launched a campaign in the fall of 2016 (PASP9) to demand the withdrawal of the project, claiming that the project has been anything but democratic and that it creates more problems than it solves (Amigo, 2016).

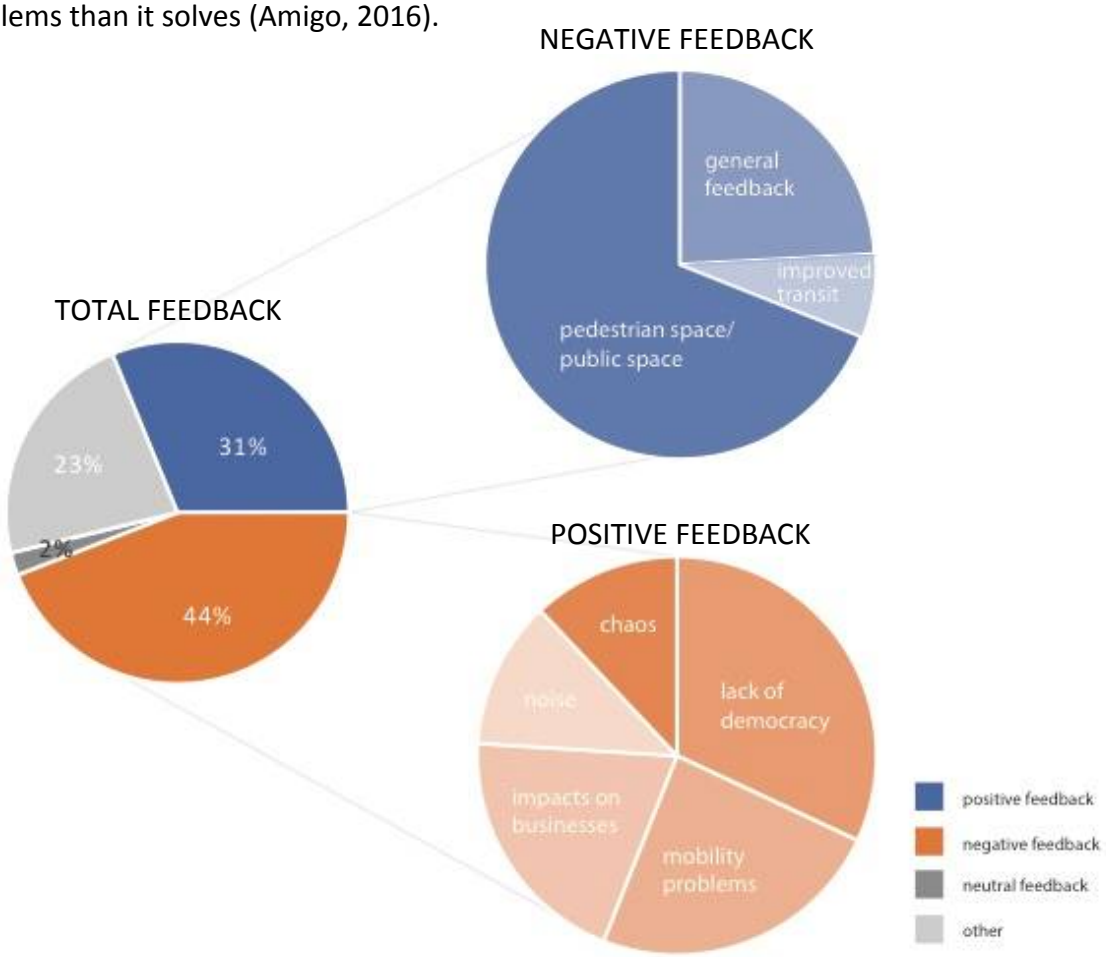


Figure 7.13: Breakdown of positive and negative feedback written on the opinion board in September 2016. Source: author.

It is striking how many residents were outraged by the lack of community participation and democracy in the early phases of the project. In fact, the SMNA, although expressing support for the project and its goals, warned that lack of information for the public could "bolster "resistance to change" among locals." (Amigo, 2016) The president of the SMNA further adds, "We believe in the initiative and also forms part of already unstoppable mobility policies that are applied throughout Europe, but it has been executed with some precipitation and without the conceptual previous steps that the city requires." (Márquez Daniel, 2016) In other words, agreement with the project's principles or theory, but disagreement with how it was implemented (the *process*). Building on Arnstein's ladder of participation once more, citizens were simply 'informed' of the superblock pilot project after it was already decided (phase 1). In Phase 2 during the pilot simulation and afterwards, citizens were consulted and listened to, but did not have any decision-making power. These facts are summarized below in figure 7.14.

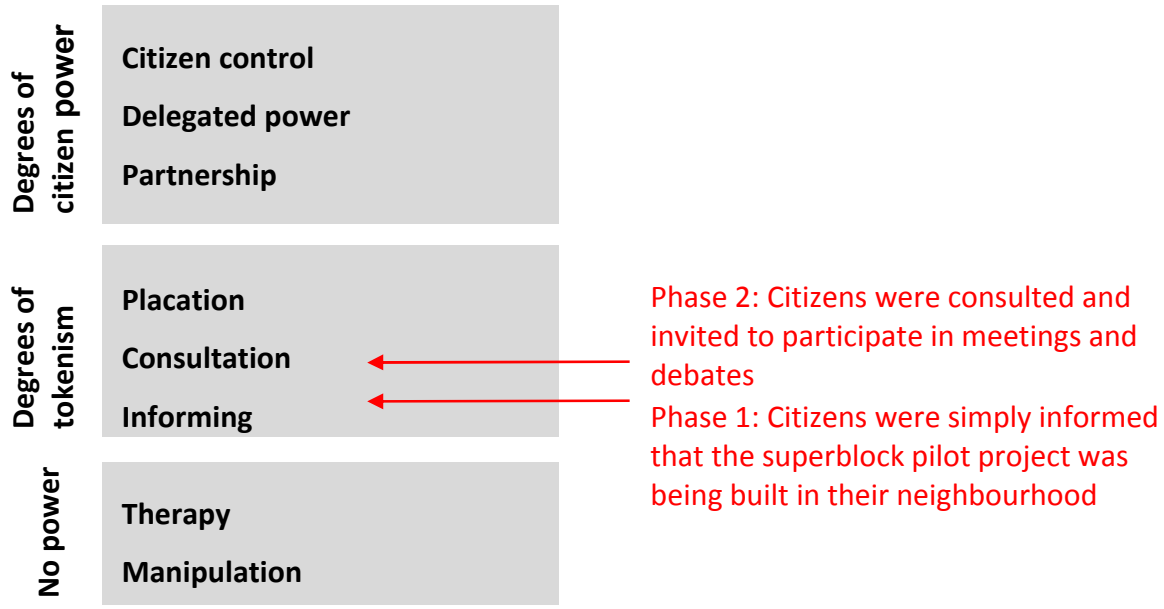


Figure 7.14: The ladder of citizen participation in the superblock pilot. Source: author. Based on Arnstein, 1969.

7.4.2 Community participation in the superblock pilot project: lessons learned

One could argue that resistance to radical urban projects like the superblock is inevitable; however, what was not inevitable was the *process* employed. The City Council and District could have executed the pilot project in a more inclusive and democratic way. Several lessons can therefore be learned from the superblock pilot project in terms of how community participation was implemented:

(1) It came too late: As has been demonstrated in other parts of this dissertation (see section 6.4.3. on lessons learned from community consultation in the BREEAM Communities pilot project), timing is key for community participation to be genuine. When all key decisions have already been made, and citizens are simply informed of these decisions, it strips them of any decision-making power and comes at odds with democratic ideals. As described above, community participation was introduced too late in the process, and was announced just prior to summer vacation when citizens did not have time to respond. Moreover, it can be seen as problematic when the UAEB Director and members of the City Council argue that the best time to interact with the local community is after a first proposal has already been made. A City Council architect explains, "There would be a first explanation, and people would return to the problems, the advantages and disadvantages they see, the things that are missing and the things they would remove." Many residents, however, feel that they should have been part of the decision-making process from the beginning to decide firstly if they even wanted a superblock and secondly where it should be located. They therefore demand more democracy and inclusivity.

(2) Information was not communicated clearly: Ideally, municipalities should be transparent and communicate information clearly and effectively concerning large-scale urban projects that affect the public realm. Residents in the Sant Martí superblock pilot project, however, argued that not enough information had been spread and not through the right channels. Deputy Mayor of of the Department of Ecology, Urbanism and Mobility, Janet Sanz, admitted that there have been communication problems. According to *El Periódico*, she said in October, "Listening to the neighbors has been the first lesson of this project. The urban debate must be on the street. But the process could have been more

participatory," she says (Márquez Daniel, 2016). The Director of the UAEB contributes to this that the City Council "does not explain well" and is not able to convince the citizens because they do not believe themselves. He adds, "When I explain, everyone says "What communication capacity! What an ability to explain things! "Why? Because I believe in it." (UAEB Director, 2016)

(3) *There is a lack of transmission line:* The best platforms for encouraging community participation are important considerations in a pilot project. Should community participation occur through public debates, meetings, online platforms, committees, etc.? According to the president of the SMNA, there needs to be an intermediary body that can mediate between the City Council (technicians), the UAEB (theoreticians), and citizens. He argues that the proposal will never work if there is no "transmission line" between various agents (2016).

Based on interviews with key stakeholders, comments written by residents on the opinion board, and secondary sources, it becomes clear that community participation at best came much too late to be effective, and at worst was a complete failure.

7.4.3 Reflections on community participation in the superblock pilot project

It is clear that community participation took on distinct characters in phase 1 versus phase 2 of the pilot project in Sant Martí. In phase 1, decisions were made in a 'black box,' where citizens were neither involved in the decision to have a superblock in the first place, nor where to locate it. As a result, many citizens have become angry about the lack of democracy in the process, and some have even taken to creating an organization aimed at removing the superblock pilot. In phase 2, on the other hand, there has been much more community participation, in the form of consultation meetings to discuss certain issues pertaining to the functioning of the superblock. The City and Sant Martí District have also made modifications to the superblock to soften its impacts on residents. Currently, based on enhanced dialogue with citizens, the City administration is proposing different long-term interventions in the area, including a blue-green corridor and a new public square near the superblock pilot site.

7.5 Limits of the Ecological Urbanism framework

The Ecological Urbanism framework, which is designed to help the UAEB diagnose where and how to implement superblocks, is a rather outside-the-box tool in many respects. Although primarily a diagnostic tool, it is also used by the UAEB to quantify sustainability levels of a neighbourhood or district and issue a score. It is a very visual tool, using maps, tables, and diagrams to communicate different sustainability variables, which is quite different from both traditional performance tools and more recent process-based tools. The indicators in the framework can be adjusted and combined to suit a specific context or 'place,' although the UAEB's definition of 'place' specificity is different than the narrative-based definition of regenerative scholars such as Bill Reed, Pamela Mang, and others. It is also a framework that by design necessitates close collaboration between different disciplines, and interpreting results to "diagnose" a context in a given scenario also requires some level of interdisciplinary collaboration. This diagnosis requires synthetic, integrated thinking and understanding the synergies between the different indicators.

The superblock concept and Ecological Urbanism framework are radical, transformative, and approaching towards regenerative and resilient. This is partly due to the fact that the framework, influenced by complex systems theory, is designed to analyze nested scales. It thus has great potential for helping neighbourhood pilot projects expand sustainability principles beyond the site's borders, one of the core tenets of regenerative design. It nevertheless also has its limits. For instance:

- The president and another member of the SMNA explained that the UAEB made several errors in their maps of the neighbourhood, for example indicating a library where there was no library or forgetting to add a school to the map. To them, this indicated a lack of care. In reality, this was the result of outdated GIS data, but this data was not cross-checked on site (President of SMNA, 2016);
- According to these same two interviewees, the UAEB's sustainability analysis is not always easy to explain to the average citizen because it is too complex and technical (ibid);

- Although highly interdisciplinary in nature, the framework itself is not participatory; moreover, as this chapter explained, the UAEB does not have the authority and jurisdiction to engage citizens anyway;
- The Ecological Urbanism framework is a top-down model for sustainable urbanism, where experts develop a diagnosis and strategic guidelines, usually in the form of different scenarios (UAEB employee, 2016) mostly based on their expert reading of the neighbourhood. There is little room for bottom-up within the framework itself and any citizen engagement depends on districts or municipalities (the UAEB's clients);
- It is limited in the timing that it is applied, which is in the pre-design phases and post-occupancy; however, the framework is not designed to be used throughout the design and planning process.

If combined with a participatory, democratic process, the Ecological Urbanism framework arguably can make advances towards a more regenerative, resilient paradigm. The framework in and of itself, though, must be understood as an innovative, interdisciplinary but expert-led tool.

7.6 Shifting paradigms: a radical proposal with a convoluted process

This dissertation's third and final case study suffers from the reverse dynamic of the previous two case studies. Whereas the EcoDistricts and BREEAM-C frameworks do not exactly promote the same built, substantive aspirations as evoked in the regenerative design and resilience literature, from a process-standpoint, these frameworks are making slow but steady steps in the direction of the new collaborative, participative, integrated paradigm. The superblock concept, on the other hand, has radical, transformative substantive aspirations. However, the Ecological Urbanism framework and the way it was applied in the Sant Martí pilot project in many respects still remains in the Technical Rationality paradigm, especially concerning the community engagement component and attempting to include hard to reach voices in the process – one of the key tenets of regenerative design. But in this paradigm shift discussion, how do we distinguish between the framework itself and how it was applied?

The paradigm shift discussion in this particular case study must occur at two levels: first at the level of the UAEB, and second, at the level of the city at large. The UAEB's concept, framework, and working methodology are all evidence of a radical way of thinking. However, the UAEB has limited capacities at the scale of the city. For instance, it is outside its scope to lead community workshops or to get "down and dirty" in the neighbourhoods, since Barcelona already has other departments whose are tasked with these items.

At a city scale, the City and District helped organize a three-week pilot project simulation, which involved participation from five different universities, different government departments, private companies, and residents. This "live experiment" was designed to show residents the potentials for appropriating public space within the superblock and to empower them. This iterative, learning by doing approach is also quite radical, and arguably, evidence of a shift in paradigm. However, the pilot project process has also encountered many roadblocks in the transition to a regenerative, resilient paradigm. The new leftist municipal government decided to move the location of the superblock decided on by the previous administration, thereby throwing months of community workshops down the drain. In this new administration, community participation was introduced too late and therefore caused strong reactions in some community groups in the Sant Marti district. And it is still too early to tell whether Barcelona will embrace collective and adaptive learning through the superblock pilot project. Within just a few months of the first phase of implementation in Sant Martí, the City made certain changes to the streets to appease angry neighbours. Since the superblock is such a controversial and divisive intervention, where some stakeholders perceive it to cause winners and losers, the issue of learning, experimenting, and adjusting over time is a highly political issue, and only time will tell how the District and Municipal parties involve will let the story unfold.

7.7 Theoretical and practical implications of Barcelona's superblock pilot project

Unlike the other case studies in this dissertation, the sustainability framework in question used in the Barcelona superblock pilot project, played much less of an explicit role. The Ecological Urbanism Framework is an expert-led, holistic tool for understanding a context and framing

urban problems; it assists the UAEB team in understanding the most important opportunities, most important needs, and the greatest potentials of an area for achieving transformational change. There is little research, however, on these types of diagnostic tools and their contribution to practice. Most research remains focused on Neighbourhood Sustainability Assessment tools, such as LEED-ND, BREEAM-C, and CASBEE, and how to measure or evaluate sustainable neighbourhoods. The superblock pilot project marks an important break from this tradition, as it brings attention to a different type of tool and a different type of pilot project – one that is iterative, involving testing and ironing out kinks before implementing long-term strategies. In this sense, it promotes *double-loop learning.* More research, however, needs to be done on diagnostic tools used in the pre-design phase and on the role of 'double-loop' learning in ecodistricts in order to help shift to a more resilient, regenerative paradigm for the built environment.

This case study also highlights the need to link stakeholder management literature with the literature on ecodistricts – a finding that is corroborated in the EcoDistricts case study (see chapter 5). Eco-district pilot projects require the collaboration and coordination of many different types of stakeholders, and their success depends on the aligned assets, actions, and expectations of these stakeholders. The superblock pilot project highlighted several challenges in stakeholder relations that affected the pilot project: the paradoxical role of the Urban Ecology Agency of Barcelona, conflicting stakeholder interests, overlapping or unclear stakeholder roles, and different knowledge types colliding. It is likely that these challenges surface in other eco-district pilot projects, so a greater understanding of stakeholder management and stakeholder relations could help minimize these challenges in future projects.

A third implication that bridges theory and practice is the tension that can arise between a revolutionary eco-district proposal and the political climate in which that proposal sits (which will be expanded on in the conclusion chapter). Even if the theory is perfect, the political, economic, and cultural contexts must be aligned so as to enable, rather than inhibit, the implementation of eco-districts. The literature calls for a change in paradigm, yet many ordinary citizens and politicians are afraid of change.

Practical implications of the study involve the need for greater coordination between different government entities so as to avoid competition, overlapping roles, and power struggles. Another practical implication of the study is to involve citizens from the outset, rather than after major decisions have been made. A very large number of criticisms concerning the superblock pilot project from the local community has to do with how it was run, and the lack of a transparent and democratic process from the outset. Who should be involved and when remains a fundamental question for these types of projects, and as was demonstrated in the superblock pilot, when citizens are not brought in early enough, they can react and hinder the process. The timing of community participation is key, as is the nature of participation (as illustrated by Arnstein's ladder of participation).

7.8 Conclusion

The superblocks pilot project (and all the pre-design work carried out at the Urban Ecology Agency of Barcelona using the Ecological Urbanism Framework) provides an example of a radical urban proposal aiming to enhance public space, air quality, and biodiversity but that encountered many challenges in its implementation. The Framework itself helped the UAEB diagnose the best area to implement the superblock pilot, and to evaluate Sant Marti's sustainability levels across 32 sustainability indicators. In this case study, collaboration and community participation evolved and changed over time and were quite different in phase 1 and phase 2 of the project – a subject that is picked back up in **Chapter 8: Shifting the Paradigm**. A change in leadership in the middle of the approvals, as well as the politics of different stakeholder roles within the City of Barcelona and lack of public engagement in the early stages presented major roadblocks. The timing of community participation, and access to clear information is thus vital. Joan María Soler, from the SMNA is not surprised that the pilot has been met with resistance from citizens. "It's a fact that limiting the 'freedom' of cars has always sparked resistance in our city. It won't go away until the benefits of the changes are more obvious," he says in an article published in Next City (Amigo, 2016). "We have experience with these situations in our borough. There were similar reactions when parking meters were installed, and when one of our main streets, the Rambla de Poblenou, was pedestrianized." (ibid)

At the same time, however, the superblock pilot project also illustrates the power of collaboration between a wide range of stakeholders in getting a project off the ground (the City, experts, universities, and the community) and the benefits of an iterative, double-loop learning process. All stakeholders might not hold the same viewpoints in Sant Martí, but they are given the platform to express their opinions and to appropriate the space and influence its eventual long-term urban design and programming. Testing out the superblock in Sant Martí is part of an on-going, iterative, and highly community-based design process that is flexible and adaptable to other neighbourhoods. In essence, the superblock is a change in paradigm existing in a context that is not ready for a change in paradigm.

CHAPTER 8

Shifting the Paradigm

This chapter summarizes the research problem and methodology and synthesizes the research results from the 3 case studies individually and then reflects on lessons learned as a whole. These lessons concern the significance of stakeholder roles and responsibilities, of building capacities in stakeholder groups, of being sensitive about when to engage local communities, and of maintaining momentum over time. Moreover, existing theoretical models were expanded on and new concepts developed in the case study chapters, and these contributions – among others – are reviewed in this chapter.

It is argued that the eco-district frameworks studied, in terms of process, are only making minor steps in the direction of a regenerative, resilient paradigm. There are several reasons for this, including that eco-districts face a number of external and internal barriers. Learning from these barriers, this chapter suggests ways that second generation frameworks can be improved, among other things, by including stakeholder support. It is suggested that the next generation of frameworks include three pillars of stakeholder support: procedural sustainability, procedural justice, and procedural resilience. Several concepts and tools are offered to help planning teams operationalize these pillars. However, further research is also needed on project management structures and capacities required to help planning teams make the transition to a more integrated model of practice.

Chapter 8: Shifting the Paradigm

8.0. Overview

Implementing eco-districts today is what may be called an "adaptive challenge," where framing the problem, finding the solutions, and convening the right stakeholders to work together is not yet obvious. New sustainability frameworks are being developed and tested in a process that is messy and imperfect. The danger of eco-district pilot projects is that they are novel and appealing and can be manipulated by City administrations for political aims or for branding. Moreover, when they are parachuted from the top-down by cities (even if for the common good), they provoke important questions about democracy and participation. Yet, eco-district pilot projects are also full of potential – if technical and process learning are built into the pilot project process, new knowledge can be gained, shared, and applied in future projects. Thus ideally, eco-district pilot projects not only provide valuable feedback about the frameworks themselves, but they allow for cities to experiment, re-evaluate practices, and adapt. Ideally, eco-district pilot projects and the frameworks they use can be vehicles for shifting to a more regenerative, resilient, and integrated paradigm for the built environment. However, as this chapter demonstrates, there are important barriers to change that deserve further attention.

This chapter summarizes the doctoral research and findings, presents transversal patterns from the three case studies, and elaborates on the thesis' contribution to current knowledge on eco-districts and eco-district frameworks. It suggests ways in which the next generation of neighbourhood sustainability frameworks might be improved, for example by providing stakeholder support, a type of support for the planning process. Here, three pillars for stakeholder support are proposed. Finally, this chapter discusses the results' theoretical and practical implications, including recommendations for practitioners.

8.1. Review of the research problem, methodology and case studies

Chapter 1 of this dissertation explained the crises that many cities globally face due to un-sustainable modes of development. The pressures of climate change make it urgent for cities

to find more sustainable and resilient planning solutions, and to adapt. As discussed in **Chapter 2**, the dissertation's literature review, in the past decade or so, there have been a growing number of scholars from the areas of regenerative sustainability, net positive development, and resilience who argue that a shift in paradigm is necessary in order to slow down and start reversing the negative impacts of urban development on ecological systems. This shift in paradigm is not only necessary for what is physically built, but also for how professionals practice, collaborate, learn, and engage with other stakeholders. This second part, the process, was the object of focus of this research.

This dissertation elaborated on the rather recent phenomenon of eco-districts and eco-district frameworks, which have become a new trend apt to leading towards more regenerative and resilient development. Eco-districts have the potential to play an advocacy role and promote experimentation and learning amongst development and planning actors and citizens. This dissertation highlighted a problem in theory with respect to research on eco-district frameworks: an epistemological problem of sorts. The current research on eco-district frameworks remains very focused on the content of the frameworks, such as the types of indicators, the appropriateness of their weighting, the appropriateness of indicators for a particular geographic or cultural context, and so forth. As described in Chapters 1 and 2 of this thesis, this approach is called the "product-based approach." This dissertation took a step back in order to understand eco-district frameworks from a more holistic perspective, asking how they are actually used in practice, how they impact the stakeholders involved in their implementation, and how they are used to make decisions during design and planning processes. The lack of a "process-based approach" for understanding eco-district frameworks represents an important instrumental knowledge gap, and one that that the dissertation helped to bridge through three eco-district pilot project case studies.

This dissertation presented a qualitative, exploratory research methodology using three innovative eco-district pilot projects in Europe and North America as case studies. The author sought out some of the most innovative (or reputedly innovative) neighbourhood sustainability frameworks in order to understand their impact on practice. The researcher spent one month in each location, conducting semi-structured interviews with the key stakeholders involved in the

pilot projects and in testing out the eco-district frameworks, which were complemented by an analysis of both primary source (official documents, meeting minutes, neighbourhood plans, etc.) and secondary source documents (newspaper articles, journal articles, etc.). The researcher uncovered recurring themes, which were analyzed according to frequency in the interviews. These themes then served as lenses or vehicles from which the author could analyze the case study data and answer the research questions. As some of these themes had not surfaced in the literature review, new literature was consulted to bolster the case study analysis. From here, the researcher developed the "process-based approach," a conceptual framework for analysing how neighbourhood sustainability frameworks are *framed* in eco-district pilot projects.

This multi-case approach allowed the researcher to extract important lessons learned from some examples of second-generation neighbourhood sustainability frameworks. The exploratory nature of the research allowed the researcher to discover contextual richnesses and new concepts and to develop detailed narratives of each of the case studies. It also allowed the researcher to find transversal patterns (as will be explained in the following section) that are likely to be reproduced in different eco-district projects in different contexts. Finally, it allowed for answering the research questions based on the voices of stakeholders involved in the pilot project processes.

The EcoDistricts pilot project in Portland, USA

In the EcoDistricts pilot project in Portland, Oregon, the Portland Sustainability Institute (Program Officer from PoSI) partnered with the Portland Development Commission (PDC employee) division of the City of Portland in order to strategically choose five districts in order to test out a pilot version of the EcoDistricts Framework (please refer back to **Chapter 5**, sections 5.1-5.3) . Here, PoSI played the role of an intermediary in the organizational structure (and maintained control over testing the framework), a role that some authors claim as necessary for transitioning to the new paradigm. This dissertation focused on the two most urban pilot projects: South Waterfront EcoDistrict, which was considered a failure, and Lloyd EcoDistrct, which was considered a success. This chapter explored the reasons why one pilot project succeeded and the other one failed.

This case study brought to light three types of obstacles in the pilot project process: first, some important external factors, such as the tanking of the U.S. economy, a public scandal, and a change in municipal leadership towards the end of the pilot project, put pressure on the pilot process. Second, several internal challenges, such as ambiguous, overlapping and uneven stakeholder roles, created differing expectations, which generated a conflict between whether the EcoDistricts concept should be bottom-up or top-down. In the absence of any conflict resolution mechanisms, these conflicting expectations went unresolved. Third, a perceived abrupt change in the nature of collaboration between all stakeholders, as PoSI stopped "holding the local district actors' hands," contributed to South Waterfront's decreased momentum for carrying through the EcoDistrict projects.

These internal and external challenges nevertheless affected the Lloyd EcoDistrict and South Waterfront EcoDistrict very differently. While the Lloyd Ecodistrict was able to overcome the roadblocks described above and form its own non-profit association and hire a full-time staff to implement sustainability initiatives, the South Waterfront EcoDistrict lost momentum and eventually disbanded. Interviews with key stakeholders from both Lloyd and South Waterfront, which were supported by documentation, shed some light on the attributes that helped lead to success or failure in the two pilot projects: in-built capacity, strong leadership, and a strong belief in the EcoDistrict process. The results of this case study analysis show that while the ingredients for collaborative planning may be present, these conditions do not necessarily guarantee the success of a collaborative process or its resilience to pressures, obstacles, and shocks. This case study therefore suggested the integration of a new concept for the literature on eco-districts and eco-district frameworks, the concept of *procedural resilience*.

The BREEAM-Communities pilot project

In the BREEAM-Communities pilot project in Malmö, Sweden, a private development company called Diligentia chose the UK-based BREEAM-Communities framework to certify its sustainable neighbourhood plan, called the Masthusen Project, located in Malmö's Western Harbour (please refer to sections 6.1 and 6.3 for a description of the stakeholders involved and the nature of the framework).

As the bespoke BREEAM-C manual is 398 pages long, it comes as no surprise that the main way that this framework impacted the planning process for the stakeholders involved was by creating extra work for the planning team. However, in unpacking this question further, this extra work had both negative and positive consequences for the planning team members. On the one hand, the mandatory community consultation component was perceived as a negative consequence of this extra work, but on the other hand, heightened collaboration and innovation in visual communication strategies were perceived as positive consequences for the planning team members. Community consultation (a mandatory component of BREEAM-Communities) was a rather futile exercise as it was introduced after the skeleton plan was already done, and the planning team opted to sacrifice certain sustainability credits rather than go back to the drawing board. The extra work created by the 398-page BREEAM-Communities manual inspired the planning team to create three different visual communication tools, which according to interviewees, were the most important tools that they used throughout the entire several-year pilot project process. These tools allowed the planning team to create a shared language, to track their own progress in real time, to learn together, and to save time and energy by understanding the synergies and interconnectedness of certain sustainability criteria.

The superblock pilot project

The pilot project in question in Barcelona, Spain involved testing the Urban Ecology Agency of Barcelona's radical proposition for transforming the city of Barcelona at the scale of nine urban blocks: the superblock. The pilot project involved using the Ecological Urbanism framework at the beginning stage (for a sustainability diagnosis), a framework used by experts at the UAEB and detached from the City and citizens.

This pilot project involved many phases and different types of actors (please refer to section 7.1 for a description of how, when and by whom the framework was used). Interviewees from the superblock pilot project heavily emphasized stakeholder relations and community participation in the process. The pilot project encountered many setbacks due to a municipal election and change of power in the middle of the community workshop process and due to overlapping stakeholder roles between the UAEB and certain city departments, which led to

competition and power struggles. Moreover, according to interviews, the UAEB seemed to play somewhat of a paradoxical role in the pilot project process, since it was criticized by some City politicians and architects as being too top-down and removed from the everyday lives of citizens; however, community engagement falls outside the UAEB's mandated scope of action. Interviewees also highlighted how different types of knowledge – technical knowledge, theoretical knowledge, and lay knowledge – collided to create frictions between different stakeholder groups. Community participation was perceived by the local community (including business interests) as coming in too late, and during the pilot simulation in September 2016, many complained about the "unjust" and "undemocratic" nature of the process. Moreover, a (non-legally binding) neighbourhood referendum was held in May 2017, which resulted in the majority of participants voting against keeping the Sant Martí superblock. The superblock case study therefore faced strong roadblocks in the process due to stakeholder relations, a rather fragmented project organization, and a highly politicized context. All in all, the Barcelona case study is a perfect model for a change in paradigm in terms of built outcomes. However, the local political, socio-cultural and economic climate do not make Barcelona "ready" to embrace it. Here, it is the process, hampered by municipal stakeholder politics, that is lagging behind the outcome.

8.1.1. Summary of results from all three case studies: transversal patterns

In the three case studies, we saw how three different planning cultures affected the pilot project processes in different ways. In Portland, we saw a progressive urban planning culture when it comes to sustainability and climate planning, but a planning culture that wants the private sector to have a strong role in building sustainable cities. The City might develop policies and plans, but as we saw in the EcoDistricts pilot projects, it was up to private and non-profit sector actors to make change happen (we saw how the City essentially convinced Lloyd and South Waterfront to sign on as pilot projects but expected them to be leaders in implementing the City's agenda). Here, the urban planning culture was an inhibiting factor, or at the very least, it did not help. In Malmö, Sweden, we saw a completely different urban planning culture: a strong state but where cities have a lot of local autonomy to develop their own energy and climate planning strategies. We also saw a planning culture that promotes constructive dialogue between

local government and developers. In this case the urban planning context acted as an enabling force in the Masthusen project. And in the superblock case, we saw an urban planning culture that is progressive when it comes to sustainability and climate planning, with a strong culture of participation and engagement, however, an urban planning culture that is very vulnerable to local politics. In this case, the urban planning culture, overshadowed by local politics, acted as an inhibiting factor in the superblock pilot project.

In these three vastly different cities, with different geo-political and urban planning contexts, facing different challenges, having different aspirations, and using different neighbourhood sustainability frameworks, several transversal patterns nevertheless emerged. Below are a few of the most important results that emerged from the cases:

(1)Power struggles, politics, and opposition

As Klause (2018) notes, "[u]rban politics and transformational adaptation are inevitably mingled with issues of power." Eco-districts that challenge the essence of a system inevitably come up against issues of power and will rarely be met with political and societal consensus. This research project showed how eco-district pilot projects often fall victim to local politics, power struggles, and conflicts between interest groups that are much bigger and powerful (no pun intended!) than the projects themselves. They can face opposition from different groups. They can be used and manipulated by local governments to support an agenda and for branding. These agendas can sometimes overshadow a fair process. There is thus a disconnect between the rational world of neighbourhood sustainability frameworks and the chaotic world of local power and politics.

(2)*Impacts of stakeholder roles & responsibilities*

This research project showed how in two of the three case studies, ambiguous, overlapping, uneven, and competing stakeholder roles had negative consequences and put pressure on planning teams and the pilot project process. For example, these unclear roles and responsibilities led to differing expectations (which lead to tensions) or to unnecessary competition between stakeholders. If eco-district planning teams have not built up enough

capacity, and if there are no conflict resolution mechanisms set in place for the pilot project process, unclear stakeholder roles and responsibilities can even contribute to the failure of a pilot project (as is evidenced by the South Waterfront EcoDistrict).

(3)Presence of stakeholder attributes and capacities

Eco-district pilot projects, like many large-scale multi-stakeholder projects invariably are faced with different types of obstacles during the pilot project processes. This research project, in two case studies, showed that the presence of certain internal attributes for the planning team can contribute to overcoming obstacles and maintaining momentum over time. Specifically, in-built capacity, strong leadership, and belief in the process were identified as internal attributes that positively affected two of the case studies. However, more case studies such as these need to be conducted in order to develop a list of generalizable attributes.[23]

(4)The role of the community as a stakeholder

Two case studies highlighted the problems that arise when community consultation is introduced too late in the design and planning process. This can lead to challenges to the pilot project on many levels, ranging from frustration and waste of resources on the part of the planning team, outrage and opposition from citizens, tensions at the municipal politics level. It can raise questions of legitimacy, social justice, transparency, and democracy in the pilot project. When community participation is embedded into neighbourhood sustainability frameworks, these framework should be introduced early on, for design-support.

(5) *Stakeholder relations, collaboration, community participation, visual communication, and momentum are all fluid over time.*

The case study research shows that different dimensions studied in the cases evolve over time. This makes it difficult, if not impossible, to make blanket statements like "collaboration was strong" in the case study, because collaboration may have been strong in some moments and

[23] For instance, and connected to the proposed concept of procedural resilience, it would be interesting to study if self-organization, learning, and adaptive capacity (three capacities of resilient systems) are appropriate for studying planning teams in eco-district pilot projects.

weak in others. See for instance collaboration in the EcoDistricts pilot projects and community participation in the superblock pilot project. Eco-district pilot projects can last two to six or seven years, and so the question of maintaining momentum (or any of the other four dimensions above) is paramount.

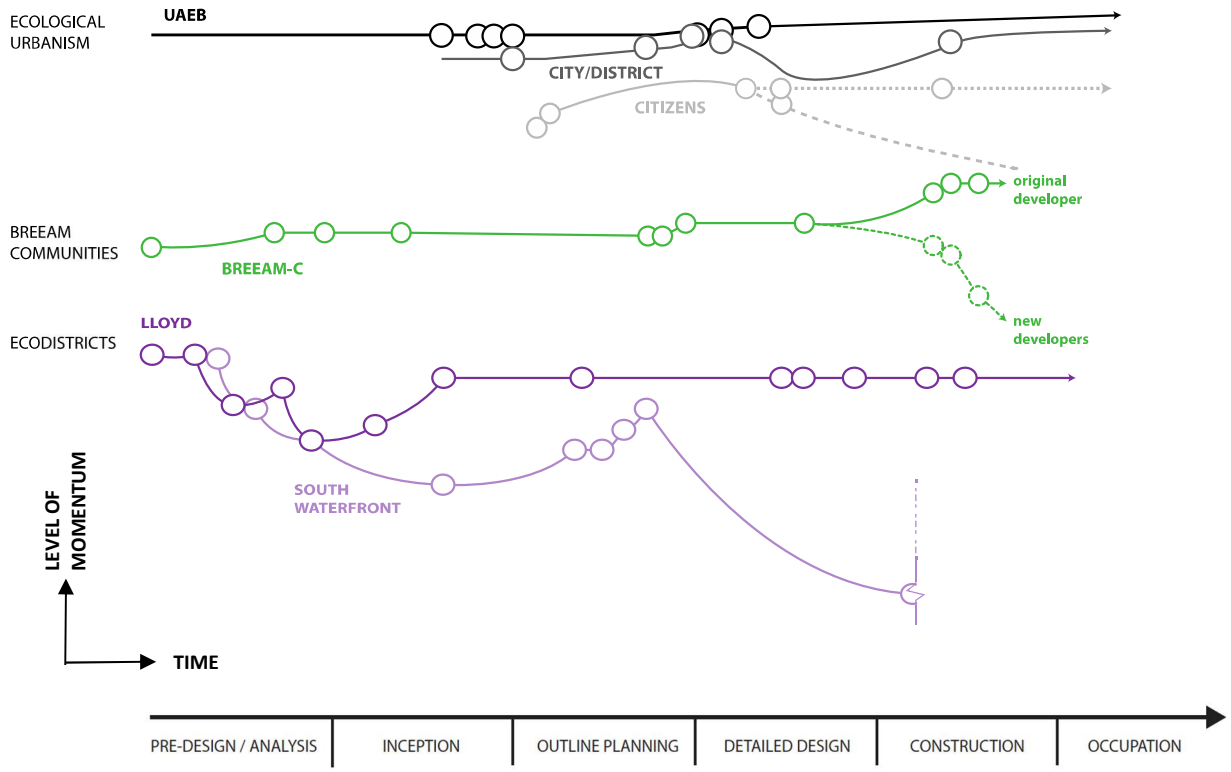


Figure 8.1: Summary graphic of momentum over time in each of the case studies. Note that sometimes momentum fluctuates according to the stakeholder group. The x-axis compares the level of momentum (low to high) and the y-axis represents time according to the different phases of the process. In the EcoDistricts case, momentum was rather stable in the case of Lloyd, whereas momentum tapered off in South Waterfront and all EcoDistrict-related activities were suspended in 2013 (please refer to **Chapter 5** for a description of why). In the BREEAM-Communities case in Malmö, momentum at some point actually increased according to interviewees as the developers moved from simply focusing on certification to wanting to implement the most stringent sustainability standards. However, the momentum of the stakeholder group split off when Diligentia sold part of the district to other developers. In the superblock pilot project in Barcelona, the UAEB, the project leader in phase 1, maintains momentum over time, whereas the City's momentum is much more dependent on the reactions of citizens. The citizens, who were angry that they were not consulted in the early stages of the superblock pilot project deal that the City made, then split into different directions after the pilot project simulation. Source: author.

(6)Who and when

The case study results provoke interesting questions about the role of local governments and other stakeholders in leading eco-district pilot projects. City-led projects are efficient and usually necessary for changing public space and infrastructure. However, cities are often risk-averse, and

these types of projects are subject to the ebbs and flows of city politics. This research suggests two things about who should lead eco-districts: first, if the City is going to be a leader, it needs to build support and consensus alongside the community. And second, this research suggests that homogenous stakeholder groups, such as one land owner or a small number of owners, in eco-district pilot projects facilitate a clearer vision, stronger collaboration and are more easily able to sustain momentum over time. These results do not suggest that heterogeneous stakeholder groups cannot be strong eco-district leaders; these groups perhaps just need more time to become aligned. The case study results also suggest that for neighbourhood sustainability frameworks to have meaningful impacts on processes and outcomes, they should be introduced as early in the planning process as possible.

8.2. To what extent do the three case studies help transition towards a more regenerative, resilient paradigm?

In order to answer the question of to what extent current eco-district frameworks are helping to contribute to a more regenerative, resilient paradigm of the built environment, it was important to first understand how the frameworks impact design and planning processes - the subject of most of this dissertation. This second question is a very important one to ask, but a very difficult one (methodologically speaking) to answer. It is nevertheless possible to glean insights into areas in the three case studies which demonstrate a transition towards a new paradigm, but also many areas that demonstrate we are stuck in old thinking models and ways of practicing.

This question is in part difficult to answer because of the three vastly different political, cultural, and planning cultures that are present in the three case studies. Should the paradigm shift be answered with respect to a universal baseline or "golden standard", or the local and contextual urban planning culture? And since this dissertation has focused almost exclusively on the design and planning process, what about built or aspired *outcomes?* The paradigm shift needs to occur both on procedural and substantive levels, but this dissertation has focused on the former. Although these questions were addressed at the end of each case study chapter, this next section will synthesize the findings and suggest future research avenues. Please refer to

section 3.3.1 in **Chapter 3** (see pages 89-90) to review the overarching principles for the regenerative paradigm. To summarize what was discussed in relation to each case study:

- The EcoDistricts Framework helps make advances towards a more integrated, regenerative model of practice by encouraging partnerships and interdisciplinary collaboration; however, it is too top-down and does not allow for the inclusion of local communities and hard to reach members, not to mention stakeholders outside the "EcoDistrict" side borders; moreover, co-learning and "double-loop learning" should have been better integrated into the pilot project process;
- In the BREEAM-C case study, from the very structure of the tool, it seems caught in between the technical-rational and regenerative paradigms since it blends both process and performance. While it does make steps towards a more regenerative, integrated paradigm by emphasizing community participation, this component must be introduced in the early planning phases. It is also important to question *who* is consulted, ideally bridging the BREEAM community with surrounding communities;
- The superblock pilot and Ecological Urbanism framework are probably the most radical of the three cases. The vision and aspired outcome in this case involve a complete transformation of the urban fabric to give back the streets to citizens and increase sustainability and resilience across many dimensions and spatial scales. It is also a multi-scalar concept that speaks to nested scales and not fixed boundaries. However, local politics and fragmented project organization make it more difficult to implement an integrated and regenerative process.

Each case study has its strong suits, but these strong suits act as the one foot forward while the other foot lags behind. These case studies seem to be lagging behind the theory, and there is still a very long way to go before any of the frameworks, the processes and organizational structures that go along with their application, can prove to be evidence of a shift in paradigm.

Figure 8.2 maps the paradigm shift of the three case studies together. The x axis represents the extent to which the *process* is 'status' quo or 'regenerative', and the y axis represents where aspired or built outcomes sit on the continuum from 'status quo' to

'regenerative'. Accordingly, the bottom left corner connotes "status quo" outcomes and processes, sustainable outcomes and processes in the centre, and regenerative "paradigm shift" outcomes and processes on the outer extremities. The EcoDdistricts case study stays mostly in the sustainable zone for aspired or built outcomes but overlaps into the regenerative zone on the process side of things (because of partnership-building, interdisciplinary collaboration, and emphasis on process over product). The BREEAM-C pilot in Malmö hovers in the center in the upper area of sustainability for aspired or built outcomes and overlaps slightly into the regenerative "paradigm shift" zone in the design process (because of community participation, synergistic thinking, adaptive and collective learning, and collaboration), and the Ecological Urbanism / superblock pilot stretches far into the upper left regenerative "paradigm shift" for built and aspired outcomes, but stays in the centre for process, or at least up until now, as it is still under development. It is worth noting that the Ecological Urbanism /superblock pilot is likely to shift over to the right in process once the iterative experimentation phases really take hold. Moreover, the diagram is not able to capture the nuances in the Ecological Urbanism case since the *internal* process inside the Urban Ecology Agency of Barcelona moves much more towards a paradigm shift than the city-led process. Not all stakeholders in a pilot project have the same vision for outcomes and processes, especially in neighbourhood-scale projects that bring together so many different interest groups and owners.

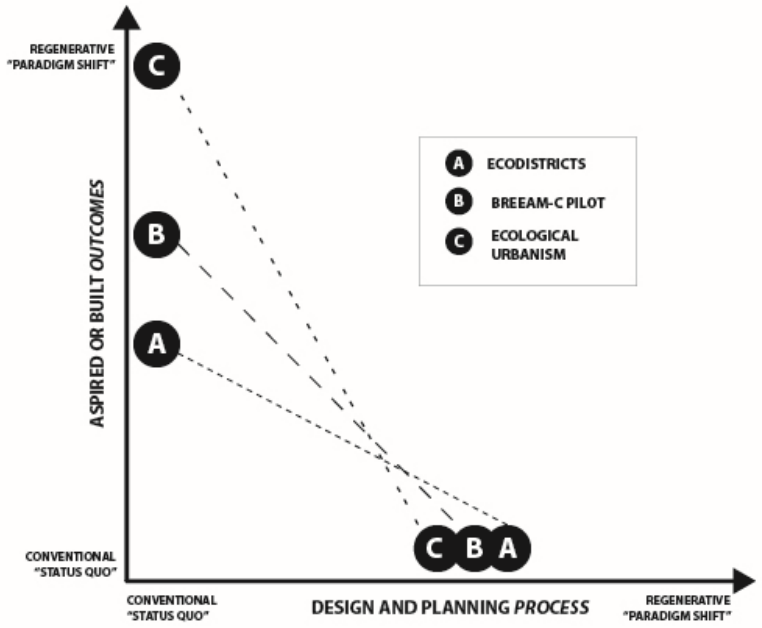


Figure 8.2,: Mapping the paradigm shift. Source: author.

Gaps between expectations and reality

The case study research revealed that there exist important gaps between the aspirations of the frameworks in questions and how certain elements are implemented. In certain cases, expectations may be exceeded (for example, visual communication and collaboration exceeded expectations in the BREEAM-Communities framework). And these may be partially the result of *favourable* external factors such as a healthy political climate and an urban planning context that pushes sustainability and collaborative governance. There are, however, more examples where the four dimensions studied do not nearly live up to the aspirations espoused in the different frameworks' promotional materials. As was discussed in the case study chapters, collaboration and stakeholder relations fell short in the testing of the EcoDistricts Framework 1.0 – a framework precisely about convening stakeholders to organize for eco-districts. Similarly, in the BREEAM-C pilot project in Malmö, there was a gap between the expectations for community consultation, and the reality of how it was implemented. And in the superblock pilot project, there was a gap between expectations for participation and appropriation of the project and the reality of pilot project process, where residents and businesses mobilized to have the City reverse certain interventions.

Barriers to shifting the paradigm

In addition to the gaps between the expectations of the neighbourhood sustainability frameworks and how they were implemented, the case study research presented several obstacles (refer to external and internal inhibiting factors sections in the three case study chapters) that impede a shift in paradigm. These obstacles can be grouped into a few main categories:

1) Major external factors: major political changes, economic crises, public scandals, public perception, systemic issues of power and equity, fragmented city administrations and professions; antiquated mental models;
2) Internal participation and inclusion barriers: unwillingness to include the community in the early stages; lack of knowledge concerning how to include those voices that are hard to reach; lack of experience in how to facilitate community workshops in order to get

useful information or feedback; other priorities overshadowing the need for a fair process;

3) Internal equity and social justice barriers: unwillingness of powerful stakeholders to share decision-making power with the community; unwillingness to share information transparently; lack of conflict resolution mechanisms;
4) Lack of capacity in stakeholder groups: lack of resources, lack of leadership, lack of belief in the process, lack of experience; non-alignment of stakeholder assets, action, or expectations.

The inhibiting factors above are in some cases random and highly contextual (for example, a sudden change in one stakeholder's engagement in the process), and in other cases, systemic and universal (for example, a change in municipal leadership or an economic crisis). While major external events are usually unforeseeable and unpreventable, results from this research offer a number of insights on how planning teams can prepare for such events. The other three types of barriers are much more within reach. As such, they deserve more attention. The following section will make suggestions on how neighbourhood sustainability frameworks can better prepare and respond to challenges in eco-district processes.

8.3. Considerations for the 3rd generation of frameworks

From the outset, this thesis has argued that it is important to consider the process of implementing frameworks, rather than solely considering the content of frameworks. The next step is to consider how 'product' and 'process' can best intersect in order to affect change. Learning from shortcomings in the case studies, it is possible to suggest ways for second generation frameworks to be improved in order to better assist in shifting the paradigm. These recommendations are focused on *process* and *stakeholders.*

First of all, rather than providing rigid criteria or a rigid protocol to follow, neighbourhood sustainability frameworks might be more flexible and allow planning teams to adapt them to local contexts. Second, they might use community participation and engagement in more meaningful ways, for example in deciding on the sustainability/resilience criteria for a neighbourhood in the

first place. The UAEB's mapping indicator set could be developed into a live, online platform where citizens and businesses participate in the sustainability diagnosis of their neighbourhood. In doing so, a co-learning experience could be created and buy-in could be generated for the project. Third, frameworks might consider integrating visual communication toolkits to assist planning teams in creating a shared language, which could be used for communicating to external stakeholders as well (although it should be acknowledged that many architects and urban planners are adept at visual communication and so may not always need such a toolkit). Finally, and perhaps most importantly, they might offer 'stakeholder support,' a type of process support to help navigate the messy pilot project process. Stakeholder support cannot resolve the challenges of uneven power relations and resource distribution, nor can it deal with unpredictable external inhibiting factors. However, what it can do, is assist eco-district stakeholders with the *internal* barriers to shifting the paradigm. In this way, stakeholder support can be seen as an additional layer for neighbourhood sustainability frameworks and could be used in a number of ways.

8.3.1. Three stakeholder support pillars

The results of this research project highlight that irrespective of the eco-district framework used, it is important that planning teams foster the concepts of *procedural sustainability*, *procedural justice*, and *procedural resilience* (refer to figure 8.3). These three concepts constitute the three pillars or principles of stakeholder support. The first concept can be found directly in the literature on regenerative sustainability (see for instance Robinson & Cole, 2015), the second concept comes from literature on ethics and justice, and the third concept was developed from the ground up, based on the research findings. These three pillars also respond to barriers to shifting the paradigm observed in the case studies. No matter the type of framework used, these principles can help planning teams and other stakeholders reinforce the process.

1) *Procedural sustainability:* 'Procedural sustainability' is about a conversation or a dialogue between relevant stakeholders and requires the integration of different perspectives "and the recognition that sustainability is a process, not an end-state." (Robinson & Cole,

2015) This pillar is about engaging and including voices that are not usually at the table. In the context of regenerative development, this might mean including voices outside the eco-district's official borders from neighbouring communities. Innes & Booher's DIAD criteria may contribute to greater procedural sustainability.

2) *Procedural justice:* Procedural justice is the idea of fairness in the processes that resolve conflicts and allocate resources (Rawls, 1972). Here, fairness refers to the process of treating all citizens equally, the first step in fair and equitable distribution of resources (S. Campbell, 1996). Procedural justice also concerns transparency and inclusiveness of the processes by which decisions are made. It also includes the idea that processes should converge towards consensus building (Deyle & Slotterback, 2009; Innes & Booher, 1999a, 1999b; Schively, 2007). Innes & Booher's consensus-building criteria, for example, may contribute to greater procedural justice. In addition to the depth of participation (refer to Arnstein's ladder of participation), the timing of participation is also an important factor in procedural justice. Practically speaking, it means putting in place mechanisms to share power equitably, to share information transparently, to build consensus, and when all fails, to have ways of resolving conflicts.
3) *Procedural resilience:* Procedural resilience means putting in place a process that will allow for more adaptive decision-making, thereby facilitating adequate response to difficult situations. It means ensuring that a process has the necessary traits for resilience in order to overcome challenges in the design process (see **Chapter 5**). It is also about sustaining momentum over time, in spite of roadblocks and other external factors that put pressure on the planning process. Internal attributes such as in-built capacity, strong leadership, and belief in the design process may contribute to greater procedural resilience as well as clear actions, assets and expectations on the part of each stakeholder or stakeholder group. In practical terms, stakeholder roles and responsibilities must be clearly communicated and understood by all parties and capacities must be developed in stakeholder teams.

Third generation neighbourhood sustainability frameworks might incorporate these three pillars of stakeholder support; they could be incorporated directly into more process-oriented

frameworks or at the beginning of a technical manual in a more product-oriented framework. Stakeholder support could be a tool that is used alongside other frameworks. It might provide conceptual guidance for helping planning teams *frame* neighbourhood sustainability frameworks (i.e. it could be explained to the planning teams of eco-districts in the very early stages of development in order to help them foster a robust planning process). Or, it might be developed into training for eco-district leaders.

Figure 8.3 illustrates the three pillars of the process-support framework with their benefits of these pillars/ principles inside the triangle. The three pillars can be considered as idealized principles for guiding eco-districts.

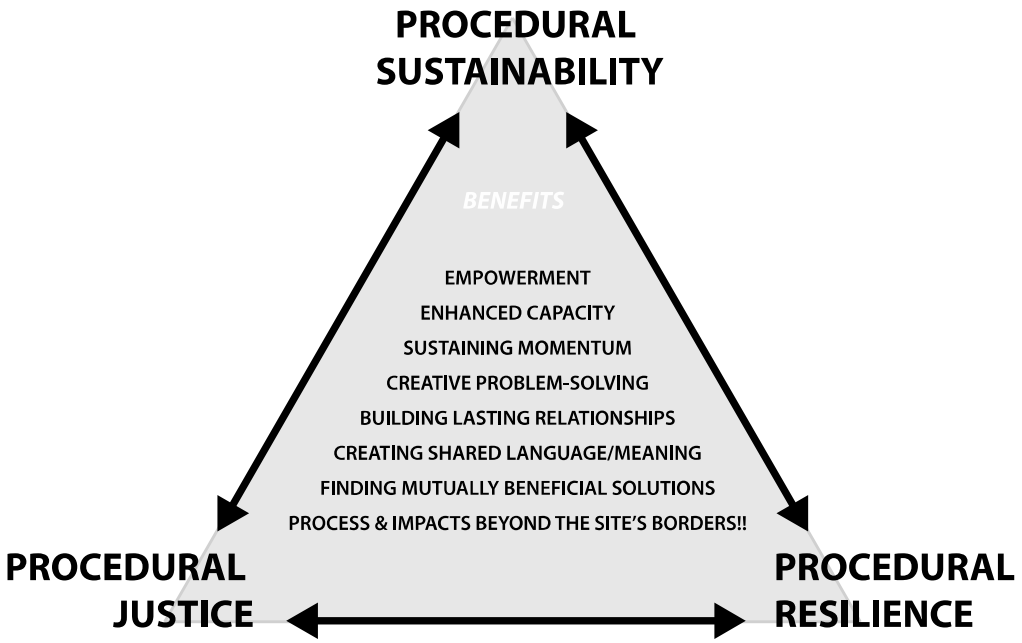


Figure 8.3: Three pillars of the stakeholder support framework. Source: author.

As discussed above in the case study summaries, eco-districts often are faced with external factors that may put pressure on the planning process, but a robust planning process that embodies these three pillars – this thesis argues – can help lead towards more regeneratively sustainable, resilient, and just neighbourhoods. The research findings therefore suggest that procedural sustainability, procedural justice, and procedural resilience need to be fostered to support the eco-district frameworks' application. But now we must ask, how can planning teams best foster a culture of procedural sustainability, justice and resilience?

Table 8.1: Summary table of all the different elements or steps contributing to better stakeholder support. The parts in red emerged from the case study research, while the parts in black emerged in the literature review. Source: author.

	Theoretical models	Useful concepts		Conditions and capacities to foster in stakeholder groups
COLLABORATION	Collaborative rationality (Innes & Booher, 2010)	Collaborative governance Internal attributes / capacities	↑ Double-loop learning ↓	• Diversity of interests • Interdependence of interests • Authentic dialogue • In-built capacity • Strong leadership • Belief in the process
COMMUNITY PARTICIPATION	Ladder of participation (Arnstein, 1969)	Consensus-building Social justice		• Deep participation • Early participation • Challenging the status quo • Shared purpose
VISUAL COMMUNICATION	Visual communication logic (see Figure 6.10)	Communicative action Shared language		• Clearly-defined stakeholder roles & responsibilities • Integration of different work methods, work languages, forms of visual representation • Integration of different types of knowledge
STAKEHOLDER RELATIONS	A-A-E model (Raynaud, 2015)	Stakeholder alignment Conflict resolution Power relations		• Aligned assets • Aligned actions • Aligned expectations • Clearly-defined stakeholder roles & responsibilities • Platform to expose conflict or let it emerge

Table 8.1 above brings together the different components of collaboration, community participation, stakeholder relations and visual communication. The four dimensions are held together by certain sub-concepts studied throughout the thesis -- collaborative rationality, consensus-building, double-loop learning, and communicative action – and certain conditions required to put these concepts into action. Double-loop learning is presented as a cross-cutting concept in that planning teams can learn and question assumptions in any of the four dimensions. Their lessons learned can feed back into the pilot project and be applied in future projects. The idea is that the stakeholder support framework presented below can help operationalize the three pillars of procedural sustainability, procedural justice, and procedural resilience. It can be thought of as a toolkit for eco-district stakeholders. Please refer to section 8.6 for recommendations of the skills that may be necessary for implementing stakeholder support.

8.4. Most important contributions of the research

While the previous sections summarized some important results and suggested some ways to improve neighbourhood sustainability frameworks, it is important to now ask: what do these results mean? What do they tell us about how neighbourhood sustainability frameworks are impacting practice? This section will explain the major contributions of the research project.

First, in line with the emerging regenerative way of thinking, this dissertation took a new approach to studying neighbourhood sustainability frameworks, an approach that is focused on process, more so than on product; an approach that is based on professionals' and other stakeholders' experiences in pilot projects. In doing so, it revealed that neighbourhood sustainability frameworks are only as good as the stakeholders who are at the table. How the frameworks are *framed* is critical. This process-based approach opened the door to a much more sophisticated, complete reading of neighbourhood sustainability frameworks. It also helped identify problems and suggest solutions.

Second, through an analysis of semi-structured interviews, this research project developed four dimensions (collaboration, community participation, stakeholder relations, and visual communication) that shed light onto the processes of implementing neighbourhood sustainability frameworks. Throughout the three case studies, it provided a series of tools for each of these dimensions that can be useful for practitioners involved in eco-district activities.

Third, it revealed important gaps between the expectations of neighbourhood sustainability frameworks and how they are applied in eco-district pilot projects, pilot projects that are messy and vulnerable to local politics. Moreover, it identified four types of barriers described in section 8.2 to shifting the paradigm. It identified those barriers that are external and unpredictable and those that are internal and easier to prepare for.

Finally, it made suggestions about how neighbourhood sustainability frameworks can be improved in light of the Ph.D.'s focus on process and stakeholder relations. It suggested that these frameworks, perhaps the third generation of frameworks, include a stakeholder support dimension in order to help stakeholders build up the capacities and arm themselves with the tools necessary to deal with obstacles in their eco-district projects. Stakeholder support could include offering guidelines to planning teams and stakeholder groups about how to build

capacity; how to align along assets, actions, and expectations; how to include diverse perspectives; how to resolve conflicts between stakeholders along the way; among others.

All in all, this research project, cast within the emerging thinking from regenerative design and resilience, made an important contribution to the literature on eco-districts and neighbourhood sustainability frameworks. It sewed together many different elements – the shift from weaker definitions of sustainability and resilience to more positive ones, the shift from a scholarly focus on 'product' to one on 'process,' and the stew of concepts, conditions, and obstacles that are at play in this discussion. It also made important contributions to practice for those professionals and other stakeholders who might be involved in eco-district pilot projects.

8.5. Theoretical implications of the research

The three case studies explored in this case study resulted in important theoretical findings that advance knowledge on eco-districts and eco-district frameworks. These findings can be divided into a) filling in instrumental knowledge gaps, b) integrating concepts; c) expanding on existing theoretical models, and d) proposing new concepts.

a) Filling in the instrumental knowledge gap

In **Chapter 1: Introduction**, this dissertation pointed to an instrumental knowledge gap concerning neighbourhood sustainability frameworks (refer to pages 6 and 7). Specifically, it argued that while there is a growing body of knowledge on the 'whats' of neighbourhood sustainability frameworks, there is an important lack of knowledge on the 'hows' of neighbourhood sustainability frameworks. This knowledge gap is partially filled by the case study research presented in this dissertation. More specifically, this dissertation developed a conceptual framework, "the process-based approach," articulated around four key dimensions that explain how neighbourhood sustainability frameworks are affecting practice. It helped shift the focus from 'product' to 'process' and 'stakeholder relations.' In applying this conceptual framework in the case studies, new knowledge about the 'hows' of eco-districts was created.

b) Integrating concepts

The case study findings revealed the need to incorporate additional bodies of knowledge into research on eco-districts that are currently left out: stakeholder management literature, visual communication literature, organizational learning literature, and collaborative planning and governance literature. Resilience is also a concept that has not yet been fully adopted in the literature on eco-districts. However, this concept offers a number of opportunities for research on eco-districts, both in terms of process and built outcomes (please refer back to Chapter 2, p 42, and Chapter 5 p 208).

The case studies in this dissertation also found stakeholder management as quite complementary to Innes & Booher's groundbreaking work on collaborative rationality. Drawing on stakeholder theory and the works of Raynaud and Demers (2015), this dissertation showed how clear assets, expectations, and actions are also necessary, and perhaps in some cases equally important to the DIAD and consensus-building criteria proposed by Innes & Booher. Having clear project expectations and clear roles and responsibilities proved to be absolutely essential in a complex project such as eco-district. Thus, together, collaborative rationality and stakeholder management can work towards helping planning teams and their stakeholders successfully deliver an eco-district project.

c) Expanding on existing theoretical models

The case study allowed for an expansion on Innes & Booher's collaborative rationality model. Three new conditions for collaborative rationality were added – borrowed from stakeholder management theory – as well as three critical attributes: in-built capacity, strong leadership, and belief in the process. The case studies found that without these additional attributes, the collaborative planning model could not withstand the shocks and roadblocks in the planning process. Second, two different case studies (the BREEAM-C case and the superblock case) showed how in addition to the degree of citizen power in a pilot project, timing is also a critical factor. Accordingly, this research suggests adding a horizontal time axis to Arnstein's ladder of participation. Ideally, in an eco-district project, meaningful community involvement

should happen right from the district organization phase in order to better empower the community and enhance its resilience.

d) Proposing new concepts

This research project suggested introducing 'stakeholder support' as a concept that could inspire a third generation of neighbourhood sustainability frameworks. It proposed three foundational pillars as part of this stakeholder support framework – procedural sustainability, procedural justice and procedural resilience – for guiding eco-districts. The concept of 'procedural resilience' was also one developed and proposed in the case study research.

8.6. Practical implications & recommendations for practitioners

The introductory chapter of this dissertation described how practitioners do not always know what tools to use or how to tackle the resilience and regenerative sustainability agendas. As described above, they might also lack a holistic understanding of the 'hows' of tools and frameworks. This research invites practitioners to have a more holistic view of the problem and not to fall into the trap of deifying tools and frameworks. By applying the "process-based approach," practitioners can reflect on how to sustain momentum over a number of years and to anticipate challenges, tensions and roadblocks in the process. The research invites them to change or enhance their vocabulary, for instance in ensuring that procedural sustainability, procedural justice, and procedural resilience be guiding principles in applying neighbourhood sustainability frameworks. It invites eco-district leaders, whether they be cities, private developers, PPPs, or non-profits, to shift the focus from the framework itself to the *stakeholder team*. This is especially important for non-homogenous stakeholder groups – such as partnerships – who will inevitably encounter different interests and expectations. It invites eco-district leaders to ensure clear communication about assets, expectations and actions and to help strengthen in-built capacity, strong leadership, and belief in the process. In summary, it invites them to consider the process elements that can support applying the 'product.'

Eco-districts are a relatively new response to urban environmental problems in the grand scheme of things. The questions of blurring boundaries, deeply engaging communities,

integrating technical systems, and tightly collaborating across disciplines raises important questions about how practice needs to shift. What are the skills that architects, urban planners, and other professionals need to develop? The results from this research can benefit practitioners in a number of ways. While further research is needed on this area, this research recommends that practitioners consider the following:

- Professionals may need to rely less on siloed, technical expertise and more on facilitation and coordination skills to work together with local communities and professionals from other disciplines;
- Professionals could benefit from developing consensus-building skills to get diverse stakeholders involved in a project to align around a common vision and purpose;
- Similarly, they could benefit from developing negotiation and conflict resolution skills (S. Campbell, 1996; Klosterman, 2013; Zellner & Campbell, 2015) and from instituting mechanisms for dealing with conflicting expectations;
- Visual communication and communication skills in general may become increasingly important in order to easily get across ideas to a wide range of people;
- Building on this last point, professionals may benefit from building the skills required to help communities develop a proper project vocabulary where everyone speaks a "shared language." In this sense, they may see their roles shifting more and more to act as "translators" between different language systems (S. Campbell, 1996);
- Professionals may want to consider learning more about what frameworks should be used when and at what scale, since there is no one-size-fits-all framework. In fact, several frameworks or tools could work symbiotically in different phases of the same projects.

As the case studies showed, an eco-district project is only as good as the stakeholders at the table, so the more that these stakeholders develop new skills, the better they will be able to fulfill the aims of regenerative and resilient development.

The results from this research project also provoke ethical questions that deserve consideration. They raise questions about social justice – who should be included in eco-district activities, when, and how to reach those voices that are difficult to reach. It raises questions about democracy and whether eco-districts should be implemented from the top-down, even if

based on the highest ideals of deep ecology, or whether there needs to be consensus and involvement from the local community. It raises questions about who should be responsible. It raises questions about transparency and about who should have access to information and when. Ethical considerations are not usually part of the discourse on neighbourhood sustainability frameworks, but deserve more attention. These are questions that practitioners may want to reflect on.

8.6.1 How the research will impact the researcher's practice

The research undertaken in this doctoral dissertation promises to influence the researcher's practice in a number of ways. First of all, as the researcher is beginning her teaching career both at the Université de Montréal and McGill University (in architecture and planning, respectively), she intends to apply it to her teaching. For example, she believes that architecture students should have access to project management and stakeholder management courses, which are usually taught only in Urban Planning and the Master's program in Project Management. Second, an optional course could be developed on Integrated Design, which would include teaching about the three pillars of the process-based approach, how to foster capacity in stakeholder groups, and how to deal with conflict and tensions. Third, within the courses that the researcher has already taught and will teach, she intends to dedicate at least one lecture to stakeholder relations and the results of this research.

Furthermore, the researcher also intends to practice as an architect. She hopes to concentrate on sustainable architecture and planning projects, which will likely involve both an integrated design process and charrettes with local communities or end-users. If working at the neighbourhood scale, she could encourage the firm to have at least one early charrette to work through stakeholders' roles and responsibilities, and their expectations of the project. She could encourage introducing conflict resolution mechanisms. This research can contribute to the regenerative approach by bringing stakeholder relations and visual communication to the discussion. In this sense, this research can help develop the researcher's "regenerative practice."

8.7. Future research opportunities

This dissertation can be seen as an ice-breaker, opening the doors to a discussion of how neighbourhood sustainability frameworks and tools are 'framed' within a larger planning process. However, further research is needed to deepen collective knowledge on several aspects discussed in the case studies. For instance, further research is needed on the internal and external factors that either enable or inhibit eco-district pilot projects. Further research is especially required on the roadblocks that planning teams encounter, as too often, only the success stories are the stories that are told. The South Waterfront EcoDistrict is a perfect example of this, where it would be important to spread knowledge on the factors that led the planning team to abandon EcoDistrict activities and to learn from these lessons. Further research also needs to be done on the links between resilience and eco-districts. This includes a greater understanding of how eco-districts can further both regenerative sustainability and ecological resilience through physical interventions and how they can foster greater community resilience.

Visual communication was highlighted as an important dimension of the process-based approach, at least in the BREEAM-C pilot project. However, there appears to be insufficient research on visual communication and its role with respect to building or neighbourhood sustainability frameworks. Visual communication tools were the most important tools used by the Masthusen planning team in order to make it through a very arduous certification process that involved frequent collaboration between different disciplines. Further research in this area could be particularly relevant in helping unpack tensions between performance and process; in other words, further research needs to be done on the structure of tools (for example checklist, governance framework document, hands-on mapping tool, tactical process-based tool) and how this structure impacts the design process in different ways. Further research is required on how planning teams create a common language in diverse contexts and with different types of frameworks and tools.

Further research also needs to be done on stakeholder management in ecodistrict projects. Who are the stakeholders in eco-district projects and what should their roles be? Who will have the power, or how will power be shared across the stakeholders? How will they share responsibility? What partnership models or planning mechanisms can help break siloes and

incentivize stakeholders to work together for the common good? In two of the case studies, overlapping, unclear or redundant stakeholder roles caused clear tensions in the planning process. This is perhaps not unique to the EcoDistricts and superblock pilot projects, and so stakeholder theory as it relates to eco-districts and eco-district frameworks is a promising avenue of research. Under this umbrella is also the role of conflict resolution. What mechanisms should eco-district projects have in place to deal with inevitable conflict? How can conflicting expectations be arbitrated? The governance of eco-district projects is therefore a very interesting future line of inquiry (and logical continuation of this research project).

In addition to stakeholder management, there is a lack of understanding of project management approaches and project organization for implementing eco-districts. While this research suggested that homogenous stakeholder groups are more likely to maintain momentum over time (with the help of certain capacities, of course), it is unclear *who* should lead and who should frame eco-district projects. Some researchers have written about transition theory and how intermediary organizations can help in transitioning from one paradigm to another. However, the EcoDistricts case study uncovered several problems with having an intermediary guide the process. While it may be true that intermediary organizations will lead the transition to a more integrated model of practice, further research is needed on *how* this can happen so that other stakeholders do not feel left behind.

Finally, this dissertation made a very important distinction between the "product-based approach" and the "process-based approach." But an important question to ask now is, how do the product-based approach and process-based approach relate to one another? Are they dichotomous? Can they be complementary? What do their relationships mean for future avenues of research? Now that we have a better understanding of the process-based approach, a logical step for future research would be to better understand its relationship to the product-based approach. Filling in some of these knowledge gaps in future research may therefore help us get closer to shifting the paradigm.

Annex A

EcoDistricts project stakeholders and project roles. Source: author.

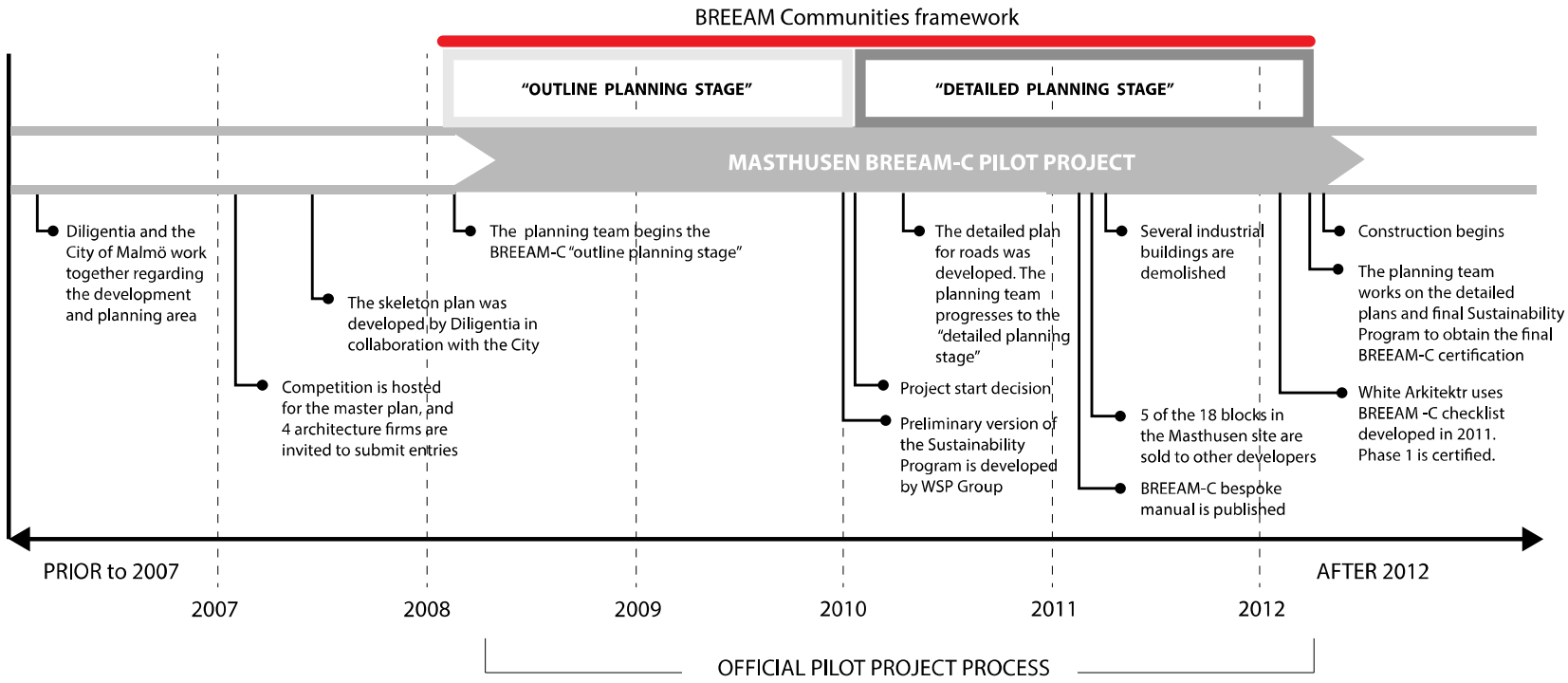
Project stakeholder	Project role
All EcoDistricts	
Portland Sustainability Institute (Program Officer from PoSI)	PoSI is a non-profit organization that developed the EcoDistricts Framework and was responsible for overall project management and facilitation, selecting the pilot projects in collaboration with the PDC, providing technical and organizational support to the pilot projects, helping create steering committees that were representative of each neighbourhood, and revising the framework based on the pilot project experiences.
City of Portland (especially Bureau of Planning & Sustainability)	The City of Portland's main responsibility was to develop and implement infrastructure, policy, and best practices that would facilitate the implementation of EcoDistricts in Portland. The City of Portland officially supported the EcoDistricts Intitiative, and so was present at many of the pilot project meetings. The BPS collected and shared data with the EcoDistricts. The City also gave authority and approved applications for Local or Business Improvement Districts.
Portland Development Commission (PDC employee)	The PDC provided project management and financial and technical analysis for the pilot projects within the PDC urban renewal areas, and along with PoSI, selected the five pilot projects. Funds for catalytic projects in EcoDistricts (biodigestor etc). They controlled funding for urban renewal areas based on a board.
Metro Portland	Metro Portland provided technical and policy support related specifically to land use planning, transportation, and public infrastructure.
Private sector green development industry leaders	They provided best practices in financing, design, engineering and operations. They were hired to do feasibility studies and district assessments.
Portland State University	PSU provide faculty and student research throughout the process, for instance in doing the EcoDistricts' assessments.
Lloyd EcoDistrict	
Executive Director of the Lloyd EcoDistrct	The Executive Director's role in the Lloyd EcoDistrict is to work with the board and district stakeholders to implement the Lloyd sustainability vision and at scale so that it is profitable for the property owners involved.
Lloyd Transportation Management Association (TMA) (since 2014 called Go Lloyd)	The Lloyd TMA is a 501(c)6 non-profit organization and public/private partnership (that includes businesses and organizations with a 17-member board of directors and 85 member businesses) whose role in the pilot project was to help implement the EcoDistrict vision. Lloyd TMA conducted a feasibility study to see if there was enough desire in the neighbourhood to initiate an EcoDistrict. They also assisted in the district assessment, especially around transportation metrics. Beyond its role in the pilot project, its larger role in Lloyd was to help different stakeholders work together to establish policies, programs, and services to address local transportation issues and foster economic development.
Consultants	ARUP, Puttman Infrastructure, and Zero Waste Alliance acted as consultants during the early phases of the pilot project.
Private sector partners	Private sector partners such as the Lloyd Center Mall, Oregon Convention Centre, Liberty Centre, and Rose Garden Arena formed a working group to collectively create a vision statement for the EcoDistrict and to sit on the board and help make joint decisions to push the vision forward.

South Waterfront EcoDistrict	
South Waterfront Community Relations (SWCR Executive Director)	SWCR was a quasi-formal neighborhood association created to direct community-building events and transportation management projects throughout the district. It was considered the leader of the South Waterfront EcoDistrict and helped organize workshops to define a vision, set goals, and develop project priorities. It acts as the Transportation Management Association (TMA) for South Waterfront. SWCR represents stakeholders in the district.
Oregon Health & Sciences University (OHSU)	Project partner and property owner (20 acres towards the north of the District), as well as member of the EcoDistrict Steering Committee. OHSU had been involved in developing its riverfront campus by partnering with the City from 1999-2008. It was involved in some studies (and was strongly considering) a district energy system in the north area of South Waterfront EcoDistrict.
Zidell Realty	Member of the EcoDistrict Steering Committee and owner of the 33-acre Zidell Shipyards. It was involved in a district-scale stormwater study and district energy study that would involve the Zidell Shipyards.
Residents & property owners	Members of the EcoDistrict steering committee, also in theory represented by the SWCR.

Annex B

Table: Masthusen project actors and project roles. Source: author.

Project actor	Project role
The developer and client (Diligentia)	The developer, Diligentia, was the BREEAM-C initiator and client (and primary property owner) for Masthusen. Its role was to make sure that Masthusen got certified as a BREEAM-Community and also to make sure it got implemented. It was responsible for creating the bespoke BREEAM-C manual and creating the documentation for certification.
Developers / property owners (the "client group")	The three other property owners now form part of the "client group" with Diligentia and signed contracts to ensure the implementation of the BREEAM-C plan. They continue to have meetings with the community to follow up on how they implement different demands and opportunities.
Sustainability coordinator	The sustainability coordinator from WSP Group, a technical consultancy, was the third party, neutral sustainability coordinator hired by Diligentia to facilitate meetings and ensure the design team stayed on target for achieving BREEAM-C certification and for implementing the scheme. Part of the sustainability coordinator's role was to demand evidence and drawings for the BREEAM-C to make sure the plan was in line with the development of BREEAM Communities.
Project manager / internal sustainability consultant	The project manager had originally been hired as an external consultant from White Architects but then was hired by Diligentia to be the full-time project manager and sustainability advisor. The project manager was also in charge of the community consultation component of BREEAM-C, and hired an anthropologist to do surveys and hold focus groups with future inhabitants.
BREEAM-C assessor	Diligentia hired a BREEAM assessor, who was also third party, and who was in charge of the reports for certification in the two different pre-assessments.
Malmö municipality	The municipality owns the streets and public spaces in Masthusen. Their role was to attend meetings and ensure that the design team was following city bylaws and sustainability guidelines, which are quite stringent to begin with. They were not a part of the community consultation, but they attended many meetings with the planning team.
Building Research Establishment Global (BRE Global)	BRE Global is the governing body that issues the third party certification. At the time that Masthusen was being certified, a BREEAM Communities Manager was the point of contact for the design team in the Masthusen project. BRE's role was to provide support and answer questions.
Community stakeholders / future inhabitants	Community stakeholders / future inhabitants were consulted with and asked to do surveys in order to understand their needs and desires for the Masthusen project.


BREEAM Communities framework
"OUTLINE PLANNING STAGE"
"DETAILED PLANNING STAGE"
MASTHUSEN BREEAM-C PILOT PROJECT
Diligentia and the City of Malmö work together regarding the development and planning area
Competition is hosted for the master plan, and 4 architecture firms are invited to submit entries
The skeleton plan was developed by Diligentia in collaboration with the City
The planning team begins the BREEAM-C "outline planning stage"
Project start decision
Preliminary version of the Sustainability Program is developed by WSP Group
The detailed plan for roads was developed. The planning team progresses to the "detailed planning stage"
5 of the 18 blocks in the Masthusen site are sold to other developers
BREEAM-C bespoke manual is published
Several industrial buildings are demolished
White Arkitektr uses BREEAM -C checklist developed in 2011. Phase 1 is certified.
Construction begins
The planning team works on the detailed plans and final Sustainability Program to obtain the final BREEAM-C certification
PRIOR to 2007
AFTER 2012
2007
2008
2009
2010
2011
2012
OFFICIAL PILOT PROJECT PROCESS

Annex C

Table: Barcelona superblock project actors and project roles. Source: author.

Project actor	Project role
The City Council	The City Council's role was to first approve (and politically back) the superblocks pilot project program at the city level (one superblock pilot project in each of the 10 districts in Barcelona). It is also their role to provide infrastructure and make sure that the superblocks get implemented (for instance painting the roads, installing bollards, changing traffic signals, and so forth) and to coordinate the mobility transformation in coordination with the UAEB.
Sant Martí District (and manager)	The Sant Martí district worked with the UEAB, after the preliminary diagnosis was done, to finalize the superblock proposal. Their role is to know the ins and outs of the neighbourhood, and to coordinate with the citizens how to implement change. They are responsible for testing the changes to public space and for collaborating with citizens and neighbourhood associations (including hosting workshops).
Urban Ecology Agency of Barcelona	The UAEB undertook the preliminary diagnosis and helped propose the locations of the ten superblocks pilot projects. They also play a coordinating role between the different levels of government and the citizens. The UAEB was also responsible for coordinating the mobility transformation together with the City Council and for doing the technical analysis for the districts and City.
Project leader and Director of the UAEB	The UAEB Director's role is to "carry the torch" and keep the momentum going from the preliminary diagnosis, often up to implementation.
Sant Martí neighbourhood association (SMNA)	The Sant Martí neighbourhood association's role was is to represent the people of the Sant Martí district and to participate actively in the superblocks simulation. Representatives from the SMNA also played an active role in the workshops held by the district of Sant Martí.
Barcelona Activa	Barcelona Activa is a division of the Barcelona City Council and is responsible for economic development. Their office is located within the Sant Martí superblock, and so they hosted the students for the two weeks. They were also "curators" in that they supported certain activities in the two-week period, such as a temporary market, and also coordinated the various neighbourhood associations.
CPTA – consortium of 5 schools of architecture (led by the Universidad Internacional de Catalunya)	The CPTA annually holds a horizontal design studio between 5 different schools of architecture, and this year, the superblock pilot project was picked as the site. The role of the students in the CPTA was to come up with temporary design proposals for the public spaces inside the superblock.
Other community stakeholders as well as future inhabitants	Besides the main neighbourhood association, Sant Martí district also has a business association, a public entity called the 22@ Network BCN, other associations made of people, and individual businesses who were involved (such as different fabricators who worked together with the students for their designs, a motorcycle sharing company, etc.).

Annex D - Semi-structured interview questions*

1. [ice breaker]: How long have you been with your company? And what's your background in?

2. Would you mind telling me about the history of you working on this project?
    a. And where did the incentive come from to get certified and why did you choose this framework over some of the other certification tools?

3. Can you tell me a little bit about the *process* of using the tool? Especially the process-aspect of the tool?
    a. Who was involved in that phase/aspect you mention?
    b. Can you clarify to me the role of the City in this?
    c. Can you tell me how the framework works? How often did you meet? Can you expand on how the meetings worked?

4. Who were the actors involved and what were their roles?
    a. How did you feel about so-and-so's involvement?

5. What was the most exciting part of working with this framework?

6. And what was the most frustrating part?

7. What were the biggest challenges in applying the framework?
    a. What tensions arose?

8. Now I want to learn a bit about the limitations of the framework. How did it affect the design? What's the best case scenario of what it can do?
    a. How do you think that the framework influenced the design and planning process or do you think that needs to change in some way?

9. How did the framework influence your practice?

10. Is there anything you would like to add?

* These questions serve as a rough guide, but were sometimes asked in a different order or sometimes a question was omitted, depending on the interview and interviewee.

Annex E – Stakeholder support diagram

The four different grey circles in Figure 8.4 describe the relative importance and overlap of the four dimensions of the process-based approach: collaboration, stakeholder relations, community participation and visual communication. At the centre, roughly placed, are some of concepts that contribute better unpacking the four dimensions: collaborative rationality, consensus-building, organizational/double-loop learning, and communicative action. Finally, outside the circles are the questions that planning teams and other eco-district stakeholders should ask to help best 'frame' the eco-district framework within the planning process.

Figure 8.4: Stakeholder support diagram. Source: author.

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