Transformation of the City from the Bottom-Up:
Supporting the Cohesion of Sustainability Initiatives

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2014
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Thesis submitted for completion of Master of Strategic Leadership towards Sustainability, Blekinge Institute of Technology, Karlskrona, Sweden.

Abstract:
The increasing pressures on the global eco-system have reached a critical stage. Cities are the center of most pressures on the biosphere and the contribution to unsustainability. Examined critically, the Sustainable Initiatives addressing urban challenges tend to act independently from each other. This situation is called the Silo-Effect, which is the state of isolation of Sustainability Initiatives in the city arena. The Silo-Effect results in a situation where the Initiatives’ use of time, energy, and resources is not optimal, therefore creating less effective impact towards urban sustainability. The purpose of this research is to suggest solutions to the Silo-Effect by asking the question, *What are the components needed to support the cohesion of Sustainable Initiatives across silos in the city?* The methodology of grounded theory inspired the data collection and analysis process of thirteen interviews with professionals from the field. Results confirmed the existence of the Silo-Effect and revealed the main components supporting Cohesion Across Silos. Emerging insights include the need to 1) create Supportive Structures that will maximize the abundant social, human, cultural and economic capitals of practitioners, provide a shared space, and support collaboration, coordination and communications efforts between Initiatives, 2) create new models of local governance and funding systems that support cohesion, and 3) focus experimentation on the neighborhood scale to minimize complexity.

**Keywords**: Sustainability Initiatives, Bottom-up, Urban Sustainability, Silo-Effect, Strategic Sustainable Development, Cohesion Across Silos
Statement of Contribution

When the three of us decided, five months ago, to work together on a thesis project, we knew that it meant bringing together a great diversity of personal stories, scientific backgrounds and personalities.

What brought us together (the “fire in the middle”) is the thesis subject that we were collectively passionate about Sustainable Cities. Margot had been researching and working on the Eco-Municipality movement in Sweden and various applications of the Local Agenda 21, Mary had a great interest in resilient cities and villages coping with natural disasters (like the hurricanes in her home state of Louisiana), while Shai was eager to keep devising ways to bring radical change and transformations to urban arenas. Hence the three of us were very well aware of the urban sustainability challenge and of the great potential represented by change agents and Sustainability Initiatives, and we were curious about ways of speeding up the transition by making these efforts more effective! This common lens, added to the strategic approach to sustainability (FSSD) that we had just been trained with, led us quite fast and quite organically to our research topic. Moreover, we shared curiosity and interest about the topic on personal and professional levels beyond the academic research.

The research process was an interesting and contrasting experience, with ups and downs depending on our moments of excitement and complicity in the team work, or our periods of confusion and misunderstandings mostly linked to our experience of grounded theory. While chatting and eating kanelbullar together always managed to keep us as a team and friends, we also received constant support and feedback from our shadow group, cluster, classmates and advisor.

Throughout the research period, the three of us made place for personal projects interconnected with the thesis work that obviously impacted at times our involvement in the research project. They include the organization of the Art of Hosting training in Karlskrona, the ALIA conference in Netherlands, a team journey to Malmö for a Green Mapping conference, our involvement in the Karlskrona Sustainability Network, Ecomuna online lectures, the organization of the Happiness Festival in Karlskrona, as well as friends’ and parents’ visits. We collectively formulated the need to respect these personal priorities and support each other in that process.

Through the entire thesis process, the important decisions were made collectively and the workload equally shared. Additionally, each of us contributed to reading, doing and transcribing interviews, analyzing the data, preparing for the presentations, discussing and writing the introduction, methods, results and discussion sections. However within this frame, individual contributions to the thesis work were based on our diverse yet complementary strengths and experiences:

From a natural science background, Shai gave thorough and critical inputs at each stage of the process, helped the team to constantly question and improve the methods design, and contributed significant qualitative and quantitative working aptitudes. Other essential contributions include pushing the team to keep deadlines, always having a clear mind on what needs to be done, being comfortable in debate spaces, making the best use of excel spread sheets, and cutting through the “fluff” without remorse.
Mary has a solid social science background that was a significant contribution to the research process. She brought in grounded theory as a methodology and kept the team on track with its use. Along with qualitative inputs to the data collection and analysis, she contributed her writing skills and her English expertise to the group. Other essential contributions include her ability to cut from complexity straight to the point, and her ability to feel comfortable within complex non-linear research processes.

Margot, also coming from a social science background, contributed her ability to swiftly read and process information, her interviewing and data analyzing abilities, as well as endless efforts to give coherence, logic and flow in the writing of the thesis. Other essential contributions include listening and diplomacy skills within team dynamics, and the use of visuals to improve the team’s ability to understand and interpret the results.

Researching success factors for Cohesion of Initiatives in the city arena gave an interesting perspective to the process of trying to be cohesive as a team when writing our thesis. In this aspect, as well as in the research, we learned a lot.

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<tr>
<th>Shai Gilad</th>
<th>Mary Wygle</th>
<th>Margot Husson</th>
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<td>Israel</td>
<td>United-States</td>
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</table>
Acknowledgements

We want to express our appreciation and gratitude to our advisors, Pierre Johnson and Sophie Hallstedt, for the academic freedom to apply the research “our way”, for the hours of reading through our writings, and providing input and critical questions that made our work better.

We want to thank our research cluster who offered support, shared our curiosity, and reminded us of the interconnectedness of the work we do. Christina, Jenny and Kate; Sergio Erica and Wiebke; Simone, Raik and Lisa: Thank you for being there.

For sharing our excitement and making the time to speak with us, we also express our gratitude to the inspiring people who shared their knowledge and expertise with us: Rob Hopkins, Torbjörn Lahti, Che Biggs, Ronny Daniel and Maya Givon, Torin Dunnavant, Orli Ronen, Deborah Frieze, Carolina Escobar Mejia, Tamar Berger, Danielle Russel, John Mullin, Paul Rainger and Joel Solomon. Most of all we are very thankful for the inspiration aroused by the work they do.

We want to thank the founders of the MSLS Program together with the course staff for walking with us in the path of learning and mastering the FSSD and for encouraging us to become better leaders. Kalle, Göran, Tracy, Pierre (again and again), Merlina, Marco, Elaine and Rachel, thank you for the knowledge, the practice, and the many hours behind the scenes.

We are not forgetting our MSLS friends. First, for being there from the beginning, sharing passion, drinking wine, eating good food, walking in the forests and sitting around the fire. And second, for the feedback during and after presentations, for enlightening conversations over coffee and for being our community. Thank you, friends.
Executive Summary

Introduction

As society evolves and develops in the 21st century, the increasing pressures on the global eco-system reach a critical stage. Cities are where most pressures on the biosphere are created, contributing to unsustainability (McCormick et al. 2013). Half of the world’s population is currently living in cities, and this number is expected to increase by 70% by 2050 (UN World Urbanization Prospects 2011). Cities are a major contributor to climate change, as up to 80% of global greenhouse gas emissions are generated in urban areas (Hoornweg, Sugar and Gómez 2011). “Cities have been identified as a key for sustainable development and climate change, and there is a general agreement that effective and integrated solutions can only be found and efficiently implemented through cities and urban areas” (McCormick et al. 2013, 2). Highly diverse agendas are promoted to address challenges within the city: land use, transportation, green building, energy, materials management, water, economic development, community engagement, among others (National League of Cities 2013; Trisolini 2010; Roseland 2012). These challenges relate to each other, directly or indirectly, and are therefore intrinsically interdependent, which adds to the complexity of dealing with them effectively (Boumans, Fei and Martin 2013).

Sustainability Initiatives and "Silo-Effect" in the city

The interconnectedness of the urban challenges as well as the lack of a systemic and strategic approach towards sustainability became obvious as Sustainability Initiatives developed within the last few decades (James and Lahti 2004; Glomsaker 2012; Hallsmith, Laybe, and Everett 2005; Bai et al. 2010). Taking a critical look at Sustainability Initiatives addressing these complex urban challenges, practitioners in the field and several academic articles support the idea that due to their specialization in certain urban areas, Initiatives tend to act isolated from each other (Senge 2008; Kania and Kramer 2011). This situation is called the Silo-Effect, which is the state of isolation of Sustainability Initiatives in the city area due to their specialization in different urban challenges. The Silo-Effect results in a situation where the Initiatives’ use of time, energy, and resources is not optimal and therefore creating less effective impact towards urban sustainability.

Research approach and contribution

Although specialization is inevitable and necessary, Initiatives would benefit from being aligned and working together (Austin 2000; Kania and Kramer 2011). The underlying assumption of this research is the need for Cohesion Across Silos to create a successful strategic and effective movement towards urban sustainability. Cohesion Across Silos is the ideal situation where Initiatives work together in an effective way towards a shared vision of urban sustainability.

The researchers identified a gap in the academic literature regarding cross-silo approaches to urban sustainability from a bottom-up perspective and a lack of community-based frameworks supporting sustainability practitioners facing this challenge. When dealing with urban sustainability, top-down and bottom-up approaches are interrelated and equally necessary (Fraser et al. 2006; Lahti 2013). Existing academic articles note that bottom-up approaches have the great advantage of overcoming bureaucratic barriers, being innovative in
a constant learning process, and inventing new ways of working together (Roseland 2012; Seyfang and Smith 2007). As a consequence, the purpose of this exploratory research is to suggest community-based solutions to the Silo-Effect identified in the field of practice.

**Framework for Strategic Sustainable Development (FSSD)**

The analytical tools provided by the FSSD give a strategic way of framing, scoping, and organizing the research topic (Waldron et al. 2008). The FSSD divides the analysis in five sections: the System that sets boundaries for the topic, the Success that is envisioned within this system, the Strategic guidelines that lead to that Success, and the Actions and Tools aligned with these Strategic guidelines needed to move towards Success. The research topic System is Sustainability Initiatives in the city working and contributing to create urban sustainability. Success within that system is defined by effective Cohesion Across Silos of these Initiatives.

The focus of the research is put on the Strategic Guidelines, Actions, and Tools necessary to reach Cohesion Across Silos, which leads to the following research question: What are the ingredients needed to support the Cohesion of Sustainability Initiatives Across Silos in the city arena? In line with the methodological approach, the overarching research question was kept large and open-ended, while the general term of “ingredients” allowed space for diverse insights to emerge directly from the field of practice.

**Methodological approach: Grounded theory**

Grounded theory is a post-positivist methodological approach that inspired the research, and was combined with the analytical framework provided by the FSSD. Grounded theory provided an in-depth qualitative analysis of processes lying underneath the research question. It allowed the researchers to enter the research field without a pre-established theory in mind, forming a theory directly from the data (Franklin and Blyton 2011). Interviews and data analysis were conducted in a parallel process until “saturation” of key themes was achieved to the point where “new data analysis returns codes that only fit in existing categories” (Birks and Mills 2011). Validation in grounded theory research is different than other methodologies. Rather the analysis of validity, measurements of Fit, Relevance, Workability, and Modifiability (Glaser 1998, 236) are used.

Open-ended and semi-structured qualitative interviews were used for data collection. The 13 interviews lasted from 30-60 minutes each and were transcribed. Keeping in mind the Strategic Guidelines, Actions and Tools levels of the FSSD, the researchers conducted the data analysis process in four phases: line-by-line coding, focused coding, clustering of themes, outline and writing of analytic memos. From this process, the results were interpreted and conclusions drawn, and an emerging theory created directly from the field, which consists of a vivid description and visuals “offering an imaginative interpretation” (Charmaz 2006, 127). In a further stage, the emerging theory was related back to the literature and framed within the FSSD.
Results

Silo-Effect and Need for Cohesion Across Silos

The initial assumptions behind the research question were confirmed across the 13 interviews. Consensus among experts supported: (1) the current existence of the Silo-Effect between SI in the city area and (2) the need for Cohesion Across Silos to create a successful movement towards urban sustainability.

Emerging insights to consider

Insights intrinsically linked to the main research question emerged that were considered as preconditions for success. They are presented ahead of the core result section because of their relevance to the main findings. The scale of operation and the influence of the local governance system and of the financing system are essential considerations when looking at Cohesion Across Silos.

<table>
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<tr>
<th>Scale</th>
<th>Local Governance System</th>
<th>Funding System</th>
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<tr>
<td>• Existence of a “Scale Challenge” linked to the complexity of urban systems</td>
<td>• Crucial influence &amp; role of Local Governments • Successful combination of top-down and bottom-up approaches • Need and potential for resources support from Local Governments</td>
<td>• Struggle and need for resources of Sustainability Initiatives • Current funding system supporting competition • Extracting resources from the public sector or creating alternative and disruptive funding structures</td>
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Ingredients supporting Cohesion Across

According to the experts, the existence of a Supporting Structure to enable Cohesion Across Silos for urban sustainability is essential and is the place where ingredients for Success are to be found. This section clusters the findings (i.e. the ingredients) in terms of the need for Supporting Structures, their role in the community, the way they work, and the essential elements that support their success.

All experts (13 out of 13) put in evidence the need for a physical structure in the city supporting Sustainability Initiatives in forming a cohesive movement. Different names are given by the experts to Supporting Structures: Capacity Centers, Impact Hubs, Networks, Coalitions, Sustainability Community Centers (see Appendix D). Beyond the diversity of
names, common characteristics described by the experts exist. The structure tends to be an independent community-based organization. It usually holds a systemic or holistic perspective of Sustainability Initiatives and urban challenges in the city. It provides a physical space or platform for Sustainability Initiatives to meet, share, work, coordinate, communicate and collaborate together. It also maintains on-going and long-term support in the community towards the shared goal of urban sustainability.

Communication, Coordination, and Collaboration are key codes associated with the role of Supporting Structures in the way they contribute to creating Cohesion Across Silos in the community.

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<th>Coordinator</th>
<th>Communication</th>
<th>Collaboration</th>
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<td>Need for:</td>
<td>Need for:</td>
<td>Need for:</td>
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<tr>
<td>An overall external coordinator</td>
<td>Internal and external communication</td>
<td>Collaboration across silos</td>
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<td>coordination skills</td>
<td>Shared language</td>
<td>Conditions, atmosphere and enablers</td>
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<td>Communication tools</td>
<td>Efficiency</td>
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Key success factors for Supporting Structures have been outlined across interviews. They relate to how the structure provides support, the people involved in it, and the drivers that bring them together.

<table>
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<tr>
<th>How does it work?</th>
<th>What are the good drivers?</th>
<th>Who is there?</th>
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<tr>
<td>Space &amp; atmosphere</td>
<td>Common Purpose</td>
<td>Diversity of actors, skills and voices</td>
</tr>
<tr>
<td>Meeting tools</td>
<td>Vision-based</td>
<td>Bring the “right people”: key actors, passionate people</td>
</tr>
<tr>
<td>Capacity building</td>
<td>“People” centered</td>
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Discussion

The results were used as the basis for discussion, which aims to interpret and further analyze the main findings, elaborate conclusions to the research question, and formulate the emerging theory of this research.

Three unintended themes are essential to consider when looking at the research question. The first is the appropriate scale to address cohesion given the complexity of the city. Results showed that the neighborhood level emerged as the most effective scale to operate within. The second is the integration of bottom-up and top-down efforts, as more collaborative models of local governance are needed. Finally, a critical view on the effects of current funding systems is necessary to consider. Sustainability Initiatives are widely dependent on financial support and governance systems that currently create competition and segregation of efforts rather than integration and cohesion between Initiatives.

Addressing the need for a more cohesive movement of local bottom-up Initiatives, the creation of a Supportive Structure was suggested, the main role of which would be to facilitate Communication, Collaboration, and Coordination efforts between relevant actors. The diversity of Initiatives requires Coordination for which skills, mandates, resources and a holistic view are necessary. Communication support is needed to ensure a shared language, the awareness of other activities and the reach and impact of Sustainability Initiatives. The
magnitude and complexity of urban challenges require wide Collaboration efforts, which are enabled by an atmosphere of trust and facilitation techniques.

The key findings of this research relate to the elements that will make those efforts successful. Initiatives need a space and atmosphere that allow people to meet with one another on a neutral ground. The facilitation by intermediaries who have a holistic perspective would increase the efficacy of meetings and activities. The intermediaries would also have training in capacity building to develop the competence of working together in a cohesive way.

These findings emerged directly from the field. The main contribution of this research is not in the depth of the exploration, but in the use of a systems approach to gather ingredients for cohesion and highlights the relationships between them. For this reason, each category is supported with existing literature to add a level of details to the main findings.

The research conclusions and the emerging theory were then structured within the FSSD to provide a clear and strategic understanding of the findings. An elaboration on the FSSD was made, which recommends “Tactical Guidelines” to the Strategic Level to address the importance of experimenting new local governance and funding models that support cohesion. Strategic Guidelines include working at the neighborhood scale and integrating Coordination, Collaboration and Communication efforts, while a Supporting Structure was suggested as the Tool required to reach success.

**Conclusion**

Acknowledging the complexity of urban systems in general and of the community of Initiatives in particular, this research outlines key ingredients supporting the creation of more effective urban transformations. To create Cohesion of Sustainability Initiatives Across Silos, this research highlights the need to: 1) create Supporting Structures that provide a shared space to Initiatives and that support Collaboration, Coordination, and Communications efforts between them; 2) experiment with new models behind the Local Government and Funding systems supporting Initiatives; and 3) focus experimentation on the neighborhood scale, minimizing complexity and enhancing flexibility of resources. The Framework for Strategic Sustainable Development is a helpful analytical framework that was used as a means to frame the research question and the key findings of this research as they keep their efforts in moving strategically towards Sustainable Cities.
**Glossary**

**Backcasting:** A planning method where planners first build a vision of success in the future, and then ask, ‘What do we need to do today to reach the vision?’

**Bottom-up Approach:** Ascendant approach to public policies and governance based on the participation and influence of the community members in public decision-making processes. It considers the actors in the community as the major initiators in the identification of public problems and the creation of public policies, while the local governments’ role is to support the community Initiatives by providing appropriate services to the citizens.

**Capacity Building:** Planned process in which individuals, groups, or organizations strengthen, expand, and enhance their knowledge, skills, and abilities for a given purpose with the use of capacity tools that help them learn.

**City:** (see Urban System) “There is no uniform definition of what constitutes a city, given the diversity of urban realities around the world. Every country defines cities according to its own criteria. [...] Cities are diverse in terms of their size, structure, spatial form, economy, wealth, local resources availability and ecological impact. [...] The population of an urban center can range from a few thousand to over 10 million people or more.” (UN 2013, 55)

**Cohesion Across Silos (CAS):** This term was created in lack of a better expression in the literature review and by the experts in the field to designate the need for a cohesive movement across urban challenges of the Sustainability Initiatives that are specialized in one of these areas. It intentionally differs from the concept of Cross-Sector Collaboration (CSC), which talks about the collaboration of actors across professional sectors (public, private, and associative). CAS is being considered as the ideal situation when Sustainability Initiatives would work together in both an efficient and effective way, specifically regarding urban transformation towards sustainability. It envisions a situation where each Sustainability Initiative holds a systemic approach to the city and is being conscious of the interconnectedness of urban sustainability challenges and of the interactions of other sustainability actors.

**Complex System:** A system that consists of a relatively large number of parts that interact in complex ways and produce a behavior that can occasionally be counter-intuitive and unpredictable (Robèrt et al. 2010). The Complex Systems Theory “provides a framework by which a group of interrelated components that influence each other can be analyzed. That group can be a sector, branch, city, organism, or even a society”. Within this theory Complex Adaptive Systems are considered as special cases of complex system that “are adaptive in the sense that they have the capacity to change and learn from experience [...] have unique features such as co-evolution, emergence, and self-organization” (Rotmans and Loorbach 2009, 2-3).

**Collaboration:** The process where two or more people or organizations work together to realize shared goals.

**Communication:** Effective activity of conveying information through the exchange of thoughts, messages, or information as by speech, visuals, signals, written, or behavior. It is the meaningful exchange of information (Wikipedia). In the urban sustainability context
communicating is effectively conveying information regarding sustainable development to the urban population.

**Coordination:** The act of organizing, making different people or things work together for a goal or effect to fulfil desired goals, and the managerial function in which different activities are properly adjusted and interlinked (Wikipedia).

**Five-Level Framework (5LF):** A conceptual framework that aids in analysis, decision-making, and planning in complex systems. It consists of five distinct, interrelated levels – Systems, Success, Strategic, Actions, Tools (Robèrt et al. 2010).

**Framework for Strategic Sustainable Development (FSSD):** The application of the 5LF for planning in complex systems to a planning endeavor with sustainability as the desired outcome (Robèrt et al. 2010).

**Funding System:** Designates the overall system of funding mechanisms that support Sustainability Initiatives by allocating them economic and financial capital, for instance through grants, subsidies, taxes, credit, or donations.

**Intermediaries:** The concept of “intermediaries” as developed by Nay and Smith (2002) outlines the inter-mediation role of individuals who create “common meaning” and shared vision between fields that do not use the same knowledge and representations (cognitive dimension of inter-mediation), and find solutions for isolated groups that can gain from cooperation even if they do not share the same objectives and interests (strategic dimension of inter-mediation) (Nay and Smith 2002). In the context of this research, the term is used to designate skilled individuals working as staff members within Supportive Structures that are able to provide on-going support to Sustainability Initiatives for them to collaborate, communicate and be coordinated (e.g. through system thinking, holistic view, problem-solving and coordination skills, capacity building, facilitation technologies).

**Local Governance System:** Designates the conceptual system that helps to understand the role and influence of the local governments and to consider the actions and services that they provide on their territory of intervention, as well as the interactions between public actors and the different community actors and organizations.

**Neighborhood Level:** In this research, neighborhood designates a sub-system of the Urban System whose size can be variable and is characterized by the proximity in public spaces and social interactions. "Neighbourhood is generally defined spatially as a specific geographic area and functionally as a set of social networks. Neighbourhoods, then, are the spatial units in which face-to-face social interactions occur" (Schuck, Amie and Dennis Rosenbaum 2006).

**Non-Profit Organization (NPO):** Organization that uses surplus revenues to achieve its goals rather than distributing them as profit or dividends. Their goal is not to be successful in terms of wealth, but in terms of giving value to the groups of people to which they administer (Wikipedia 2014).

**Scale:** In the context of this research, the reference to “scale” designates the different territorial levels that define the sub-systems within the urban system, which can also be considered as perimeters of intervention of local governments (e.g. neighbourhood scale, city scale, regional scale, global scale).
Silo-Effect: State of isolation of Sustainability Initiatives in the city arena due to their specialization in different interconnected urban challenges that result in a situation where their use of time, energy, and resources is not optimal, therefore creating less effective impact towards urban sustainability.

Facilitation Technologies: Diverse conversational and collaborative methods, processes, and practices facilitated by skilled individuals. For example, the technologies taught within Art of Hosting trainings: Open Space Technology, World Café, Circle, Appreciative Inquiry, and Pro-Action Café.

Supporting Structure (SS): Physical space that supports Cohesion Across Silos by providing a platform, tools, and conditions for Communication, Collaboration, and Coordination of Sustainability Initiatives. It is an independent, community-based organization that holds a system perspective of the urban sustainability challenges and actors, and provides ongoing long-term support to the community of Sustainability Initiatives.

Sustainability: State of the socio-ecological system, which enables organizations to achieve full alignment with the four sustainability principles and human societies to sustain themselves in the long-term.

Sustainability Challenge: The combination of the systematic errors of societal design that are driving humans unsustainable effects on the socio-ecological system, continuing the decline in capacity and resources that support human society, and creating conditions that no longer enable it to sustain itself (Robèrt 2000; Robèrt et al. 2010).

Sustainable Initiatives (SI): The actors in the urban community (e.g., individuals, businesses, non-profit organizations and institutions) investing time, money, and energy to make cities more sustainable. The term “Initiatives” is being used to designate both informal groups of individuals and formal organizations working with sustainability.

Sustainability Principles (SPs): Basic principles for sustainability that work as boundary conditions for sustainability in the biosphere, underpinned by scientific laws and knowledge (Robèrt et al. 2010).

Systems Thinking: Approach to problem-solving that allows the consideration and understanding of the whole system rather than its isolated parts (i.e. holistic approach) and the complex interactions between them. It is “a tool to conceptualize how processes, events, and things are interrelated” (Heft 2006). It provides a broader perspective that looks at what are seemingly isolated events or phenomena and relates them to other parts of a larger system within which they are located.

Top-down Approach: Descendant approach to public policies and governance in which public actions and policies are initiated by the public actors within local governments. This approach tends to centralize decision-making processes and services provided by the local governments.

Transition Theory: A theoretical framework developed to aid the understanding of transition and radical change processes toward sustainable societies. It is based on a Multi-Level Perspective which “conceives of a transition as interference of processes at three levels: innovative practices (niche experiments), structure (the regime), and long-term,
exogenous trends (the landscape)” (Grin, Rotmans, and Schot 2010, 5), and developed a step-by-step framework called the Transition Management Framework.

**Urban Challenges:** Specific areas of the urban sustainability challenge in which Sustainability Initiatives specialize. For example, land use and planning, buildings and energy, transportation, water and green infrastructure, equity and engagement, food systems, climate adaption and resilience (National League of Cities 2013).

**Urban Sustainability:** Sustainability applied to the urban system, which can also be described as a situation where the human activities in a city are in full alignment with the four Sustainability Principles.

**Urban Sustainability Challenge:** Sustainability Challenge applied to urban areas, focused on maintaining a high level of service for the urban population in the form of transport, security, employment, housing, food, clean water, and waste and sewage management, among others, while systematically moving towards Urban Sustainability.

**Urban System:** “Modern way of conceiving the city” defined as "set of relations between phenomena, events, and flows” developed in a spatial area (Archibugi 1996). Beyond administrative borders and physical structures, it designs the complex system of social structures and the spatial organization resulting from dynamic interactions between actors living in the urban area (Bretagnolle, Daudé and Pumain 2003). Sizes of urban systems are variable (see City).
List of Acronyms and Abbreviations

CAS - Cohesion Across Silo

FSSD - Framework for Strategic Sustainable Development

LG - Local Government

NPO - Non-Profit organization

ORG - Organization

SI - Sustainability Initiatives

SPs - Sustainability Principles

SS - Supporting Structure

5LF - Five-Level Framework
Table of Contents

Statement of Contribution ........................................................................................................ ii
Acknowledgements ................................................................................................................ iv
Executive Summary .............................................................................................................. v
Glossary .............................................................................................................................. x
List of Acronyms and Abbreviations ............................................................................. xiv
Table of Contents ................................................................................................................ xv
List of Figures ..................................................................................................................... xviii

1 Introduction ................................................................................................................... 1
  1.1 The sustainability challenge ...................................................................................... 1
  1.2 Urban sustainability .................................................................................................. 2
    1.2.1 Role of cities in the global challenge .............................................................. 2
    1.2.2 Cities as complex systems .............................................................................. 3
  1.3 Sustainability Initiatives and the “Silo-Effect” ....................................................... 3
    1.3.1 The Silo-Effect in the field of practice ............................................................ 4
    1.3.2 The Silo-Effect in the academic literature ....................................................... 4
  1.4 Research purpose and contribution .......................................................................... 5
    1.4.1 The need for “Cohesion Across Silos” .............................................................. 5
    1.4.2 Research gap: Bottom-up approach ................................................................. 5
    1.4.3 Research purpose ............................................................................................ 6
    1.4.4 Framework for Strategic Sustainable Development ....................................... 6
    1.4.5 Research question ............................................................................................ 7

2 Methods .......................................................................................................................... 8
  2.1 Methodological approach: Grounded theory .......................................................... 8
  2.2 Methods ...................................................................................................................... 9
    2.2.1 Data collection process .................................................................................... 9
2.2.2 Data analysis process ................................................................. 9
2.2.3 Emerging Theory ........................................................................... 10

3 Results ................................................................................................................. 12

3.1 Silo-Effect and the need for Cohesion Across Silos .............................................. 12
  3.1.1 The Silo-Effect in the urban sustainability challenge .......................................... 12
  3.1.2 Need for Cohesion Across Silos .......................................................................... 13
3.2 Emerging insights to consider .............................................................................. 14
  3.2.1 Scale ................................................................................................................. 14
  3.2.2 Local Governance system ................................................................................. 16
  3.2.3 Funding system .................................................................................................. 18
3.3 Ingredients supporting Cohesion Across Silos for Urban Sustainability............... 21
  3.3.1 Need for a supporting structure.......................................................................... 21
  3.3.2 Role of supporting structures: Enabling Cohesion Across Silos ............................. 22
  3.3.3 How do the supporting structures work? ............................................................. 27
  3.3.4 Elements that support success of supporting structures ...................................... 28

4 Discussion .......................................................................................................... 33

4.1 Research conclusions ......................................................................................... 33
  4.1.1 Relevant insights to the research question ......................................................... 33
  4.1.2 Ingredients that support Cohesion Across Silos of Sustainable Initiatives .......... 34
4.2 Emerging Theory ............................................................................................... 35
4.3 Confrontation of the research conclusions with existing academic literature ........ 36
  4.3.1 Appropriate scale of operation ........................................................................... 36
  4.3.2 Role of Local Governments ............................................................................... 37
  4.3.3 Supporting funding system ................................................................................. 38
  4.3.4 Supporting structure .......................................................................................... 38
4.4 Theory framed within the FSSD .......................................................................... 41
  4.4.1 Added insights to the system and success levels ................................................. 41
4.4.2 Elaboration on the Framework for Strategic Sustainable Development ...............42

4.4.3 Ingredients supporting Cohesion Across Silos between Sustainability Initiatives 42

4.5 Discussion of the assumptions, research bias and validity considerations ...............44

4.5.1 To what extent Cohesion Across Silos is actually needed? .................................44

4.5.2 Being aware of the data collection bias: The need for a supporting structure .......45

4.5.3 Validity in Grounded theory: Measurements of fit, relevance, workability, and 
modifiability ....................................................................................................................45

4.6 Limitations and further research perspectives ...............................................................46

4.6.1 Limitations ..............................................................................................................46

4.6.2 Further research ......................................................................................................46

5 Conclusions ....................................................................................................................48

References...............................................................................................................................49

Appendices .............................................................................................................................57

Appendix A - Questionnaire ................................................................................................57

Appendix B – List of Interviews ..........................................................................................59

Appendix C – Data Analysis Process ..................................................................................60

Appendix D – Examples of Supporting Structures ............................................................63

Appendix E – Examples of alternative funding structures ..............................................66
List of Figures

Figure 1: The Funnel Metaphor .............................................................................................................................. 1

Figure 2: Silo-Effect and Cohesion Across Silos .................................................................................................... 5

Figure 3: 5LF analysis of the global and urban systems and of the research topic ............................................. 7

Figure 4: Research methods process .................................................................................................................... 11

Figure 5: Visual - Role and characteristics of the Supporting Structure ............................................................... 35

Figure 6: Visual - Ingredients for Cohesion Across Silos of SI in urban system - creating a SS at the neighborhood scale supported by Local Governance and Funding Systems ........................................... 36

Figure 7: Final 5LF analysis framing the research conclusions: ingredients for Cohesion Across Silos of Sustainability Initiatives .................................................................................................................. 42
1 Introduction

1.1 The sustainability challenge

As our society evolves and develops in the 21st century, the increasing pressures on the global eco-system have reached a critical stage. Air and water pollution, species extinctions, climate change, trust erosion in the society, among many other diverse and complex challenges, are a major threat to our ability to sustain human kind in the long term.

"Anthropogenic pressures on the Earth System have reached a scale where abrupt global environmental change can no longer be excluded" (Rockström et al. 2009, 1).

“We are approaching global boundaries beyond which we can expect system failures and breakdown in life-supporting earth-system services” (Robèrt, Broman, and Basile 2013, 8).

The metaphor of the funnel (Robèrt 2013) describes this decline of the biosphere resources at an unprecedented pace in the history of the Earth as they are being damaged or exhausted faster than nature can regenerate them. In the meantime, human population is exponentially growing and with it the demand for resources. Maintaining this pressure on the biosphere, we are moving further down to the narrow part of the funnel, and reducing our margin of action and the chances of survival for future generations.

The human responsibility for these global trends and pressures on the biosphere is not a subject of controversy anymore in the international scientific community. As stated by the latest IPCC Report, “It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century” (IPCC 2013, 17). This scientific consensus is supporting the urgency of global coordinated action from our societies to reduce our contribution to pressures on the biosphere.

Science-based frameworks to describe and work with a long-term and systemic perspective of sustainable development have been developed, such as the work of Stockholm Resilience Center on the Planetary Boundaries (Rockström et al. 2009).

A complementary framework to the Planetary Boundaries (Robèrt, Broman, and Basile 2013) is the Framework for Strategic Sustainable Development (FSSD), which is the lens that this research uses. The framework is based on a combination of the Five-Level Framework (SLF) (see section 1.4.4) with Sustainability Principles (SPs). The four SPs were specifically derived to cover all aspects of the sustainability challenge. They are “necessary to reach the objective, sufficient to cover all aspects of the objective, general to make sense for all stakeholders and thus allow for cooperation, concrete to guide problem solving and actions, and distinct to enable comprehension and facilitate development of indicators for monitoring” (Robèrt, Broman, and Basile 2013, 3). They represent boundary conditions to human activities within the biosphere and guide the reduction of systematic barriers to sustainability.
“In a sustainable society, nature is not subject to systematically increasing:
1. Concentrations of substances extracted from the Earth’s crust, such as fossil carbon or metals;
2. Concentrations of substances produced by society, such as nitrogen compounds, CFCs, and endocrine disrupters;
3. Degradation by physical means, such as large scale clear-cutting of forests and over-fishing; and, in such a society;
4. People are not subject to conditions that systematically undermine their capacity to meet their needs, e.g., from the abuse of political and economic power leading to decreasing interpersonal trust and decreasing trust between individuals and societal institutions.” (Robèrt, Broman, and Basile 2013, 3)

1.2 Urban sustainability

1.2.1 Role of cities in the global challenge

Since the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, the discussion on urban sustainability is growing systematically (McCormick et al. 2013; UN 2013). Cities are the place where most pressures on the biosphere and the contribution to unsustainability is created (McCormick et al. 2013). For the first time in history, half of the world’s population is currently residing in cities, and it is expected that this number will rise to 70% by 2050 (UN World Urbanization Prospects 2011). Cities are a major contributor to climate change: up to 80% of the global greenhouse gas emissions are generated in urban areas (Hoornweg, Sugar, and Gómez 2011). Many other issues are often related with urban growth, such as air pollution, over-consumption, growing social tensions (MacCormick et al. 2013) and urban inequality (UN 2013). As such, the urban sustainability challenge, both from an environmental and a social perspective, is crucial.

“Cities have been identified as a key for sustainable development and climate change, and there is a general agreement that effective and integrated solutions can only be found and efficiently implemented through cities and urban areas” (McCormick et al. 2013, 2).

Cities accommodate large concentrations of people and are the reservoir for human potential. From a techno-economic perspective, cities are the vessels of the economy and the place where human interactions happen and where people want to live. They contain most of the investment of resources and innovation, making them crucial for the future of the economy and technological development (UN 2013; Copenhagen Cleantech Cluster 2012).

Cities across the world compare and learn from each other for best practices (National League of Cities 2013; Institute for Local Government 2013). Since Rio 1992 and the acknowledgment of the role of the Local Government (LG) in the urban sustainability challenge, Local Agenda 21 movements have been spreading in cities all over the world with the help of international institutions like ICLEI (International Council for Local Environment Initiatives). LGs lead the majority of experiments (Castán Broto and Bulkeley 2013) with Initiatives like The Worlds Mayors Council on Climate Change, the European Green Capital award and the C40 Cities Climate Leadership group which focus on mega cities (C40 Cities 2014). Moreover, there are more experiments with local and grass-root solutions based on the
empowerment of individuals, like the Transition Town movement and the Eco-Municipality participatory approach (Hopkins 2011; Lahti 2013).

1.2.2 Cities as complex systems

A city is a complex system, because it consists of a multitude of subsystems and actors in constant interaction with each other (Suzuki et al. 2010; Glomsaker 2012). There is a large diversity of agendas being promoted to address challenges within the city: land use, transportation, green building, energy, materials management, water, economic development and community engagement, among others (National League of Cities 2013; Trisolini 2010; Roseland 2012). These challenges relate to each other directly or indirectly, and are intrinsically interdependent, which adds to the complexity of dealing with them effectively (Boumans, Fei, and Martin 2013).

The effort towards a sustainable urban system requires a system perspective, as an approach to understanding the complex interactions and interrelated connections of a city.

“The aim of systems thinking is to reduce complexity by understanding how parts fit into a whole. The challenging aspect is overcoming the institutional structures and inherited attitudes that prevent city leaders, investors, designers, users, suppliers, and managers from working as a team” (Suzuki et al. 2010, 36).

To address complex systems, three capabilities are needed: seeing systems, collaborating across boundaries and creating a desired future (Senge 2008). In this sense, sustainable urban transformation must involve actors and leaders from all sectors and levels of governance to radically change cities towards sustainable practices (Frantzeskaki and Tilie 2014).

1.3 Sustainability Initiatives and the “Silo-Effect”

In the city arena, many diverse actors continuously invest energy in sustainability and urban transformation. The role of Initiatives offering solutions to current dominant unsustainable practices has been widely discussed in the academic literature (Rotmans and Loorbach 2009; Seyfang and Longhurst 2013; Hargreaves et al. 2013; Seyfang and Smith 2007). For instance, the importance of stimulating the development of front-runners and of empowering disruptive movements (Rotmans and Loorbach 2009). According to Transition Theory focusing on these Initiatives, or “niches”, already working towards sustainability is essential, because these players are highly and authentically committed to sustainable development, enthusiastic, and innovative, and as such have a significant transformative potential (Seyfang and Smith 2007).

For those reasons this research is scoping to the Sustainability Initiatives (SI), which are all of the actors in the urban community (individuals, businesses, non-profit organizations (NPOs) and institutions) that invest time, resources, and energy to make cities more sustainable. The term “Initiatives” is being used to designate both informal groups of individuals and formal organizations (ORG) working with sustainability. Examples include a local organic farm, a volunteer-based equal rights association, a wind power start-up, the local green political party, a resilience research center, the sustainability municipal department, a biodiversity protection NPO, or a student project about participatory community processes.
When taking a critical look at SI addressing interconnected urban challenges, literature and practitioners in the field point out that they tend to act isolated from each other:

“People everywhere today are reacting to different facets of the sustainability challenge, but many of the efforts represent reactions to what are seen as separate and distinct threats, as opposed to a deep reflection on the interconnections between these different issues.” (Senge et al. 2008, 51)

“Nearly 1.4 million nonprofits try to invent independent solutions to major social problems, often working at odds with each other.” (Kania and Kramer 2011, 38)

This “Silo-Effect” leads to a situation where SI’s may miss opportunities to work together and optimize their use of time, energy, and resources, therefore creating less effective impact towards sustainable transformation. The specialization of SI on different parts of the urban challenge is necessary and not questioned in this paper. The focus is put on the potential for them to be more aligned with each other, as outlined in the field of practice and in the literature.

1.3.1 The Silo-Effect in the field of practice

As SI developed across sectors in the communities, the interconnectedness of the challenges in complex urban arenas became obvious, as well as the lack of a systemic and strategic approach towards sustainability (James and Lahti 2004; Glomsaker 2012; Hallsmith, Laybe, and Everett 2005; Bai et al. 2010).

As a consequence, sustainability practitioners in the field started to envision new ways of working together and dealing effectively with human and financial resources. For example, the Urban Transition Labs experiment whose purpose is to develop “knowledge on how to proceed with local sustainability oriented change processes [that] could be a firm support for local actors in their quest for effective and efficient action” (Nevens et al. 2013, 1).

The need for a systemic approach to sustainability in the city arena is recognized in the field of practice and has been increasingly documented in the past few years by different sustainable cities institutes and movements. It was particularly and primarily identified within LGs, as the integration of decisions, planning, and implementation across municipal departments became key to making sustainable action plans effective (Ling, Hanna, and Dale 2009). An extensive list of frameworks and toolkits addressing this need have been developed, such as the Eco2cities “One-System Approach” (Suzuki et al. 2010), the “Integral City” concept (Hamilton 2013), the “Smart City” model (Colldahl, Frey, and Kelemen 2013), and municipal experiences of “Integrative Community Sustainability Plans” (TNS Canada 2014).

1.3.2 The Silo-Effect in the academic literature

In parallel, integrative approaches to urban sustainability have been a recent object of research in the academic literature. Articles mention system thinking for sustainable cities, and explore tools like “feedback loop systems” (Glomsaker 2012), “sensitivity models” (Chan and Huang 2004), and systemic approaches to environmental urban policy and governance (Bai et al. 2010). There is other related literature around the “Collective Impact” concept (Kania and Kramer 2011), which focuses on creating a collective effort to solve social challenges instead of isolated impact of ORGs; Cross-Sector Collaboration (CSC) for
1.4 Research purpose and contribution

1.4.1 The need for “Cohesion Across Silos”

The existence of this “Silo-Effect” of SI in the city is the basis of this research study. It leads to the idea that although specialization of SI in various urban challenges is inevitable and necessary, the Initiatives would benefit from being aligned and working together (Shellenberger and Nordhaus 2004; Nevens et al. 2013; Quitzau et al. 2013; Austin 2000). Therefore, the underlying assumption of this research is that there is a need for Cohesion Across Silos (CAS) to create a successful strategic approach to urban sustainability.

The term CAS was created for lack of a better expression in the literature review and by the experts in the field to designate the need for a cohesive movement across urban challenges (e.g., food, transport, energy, water, and waste) of the SI that specialize in one of these areas. It differs from the concept of “cross-sector collaboration” (CSC), which refers to the collaboration of actors across professional sectors, like the public, private, and associative sectors (Bryson, Crosby, and Stone 2006). CAS is the ideal situation where SI would work together in an effective way towards a shared vision of urban sustainability. It envisions a situation where each SI holds a systemic approach of the city, and is being conscious of the interconnectedness of urban challenges and of the other actors working towards the same goal: a sustainable city.

Figure 2: Silo-Effect and Cohesion Across Silos

1.4.2 Research gap: Bottom-up approach

Working for urban sustainability, top-down and bottom-up approaches seem to be equally necessary and interrelated (Fraser et al. 2006; Lahti 2013). Municipal local sustainability movements historically received much support in terms of resources, trainings, and frameworks from international institutes and from national governments. Today sustainable development practices are incorporated and institutionalized in municipal ORGs and are often associated with the development of community participatory processes (Lafferty 2001; Lahti 2013). Simultaneously grass-root and community-based approaches to sustainable issues are developing and spreading everywhere (Hopkins 2011). Relevant literature outlines sustainability (Bryson, Crosby, and Stone 2006; Senge et al. 2008); and the work on nexus approaches (Hoff 2011), which integrates interrelated areas and is usually applied beyond the urban context.
that bottom-up approaches have the great advantage of being able to overcome bureaucratic barriers, being creative and innovative in a constant learning process, and inventing every day new ways of working together (Roseland 2012; Seyfang and Smith 2007).

Overall, the publications in the academic literature that relate to the Silo-Effect and the need for CAS mostly seem to be proceeding from a “top-down” perspective. The need for the integration of sustainability challenges in the city arena is thus seen through the lens of LGs as an internal organizational issue.

As such, a gap exists in the academic literature regarding cross-silo approaches to urban sustainability from a bottom-up perspective, and a lack of community-based frameworks supporting sustainability practitioners facing this challenge. For that reason, this research is focusing on CAS from the bottom-up perspective. It considers all actors across organizations in the community (NPOs, businesses, individuals, institutions, and LGs included) working with sustainability.

1.4.3 Research purpose

As an exploratory project on sustainable cities, the purpose of this research is to suggest solutions to the Silo-Effect identified in the field of practice. It starts with an appreciative recognition of all the energy and resources being invested for sustainability in cities while also recognizing the need to make this action more efficient, which is assumed to be reached with CAS.

From an academic perspective, the purpose of this research is to contribute to filling the gap in the literature regarding bottom-up approaches of CAS for sustainability with the hope of opening opportunities for further research in this area.

There is also an intentional practical purpose to this research, to explore and suggest guidelines for sustainability practitioners to better support each other in the city arena. The audience of this research includes all the SI in the community (NPOs, businesses, individuals, and public institutions). To make this contribution to both the academic and the practical field as strategic as possible, this research is using the FSSD.

1.4.4 Framework for Strategic Sustainable Development

The analytical concepts provided by the FSSD give a strategic way of framing, scoping, and organizing the research (Waldron et al. 2008). The FSSD divides the analysis in five sections: the System that sets boundaries for the topic, the Success that is envisioned within this system, the Strategic guidelines that lead to that Success, and the Actions and Tools aligned with these strategic guidelines needed to move towards Success. To work strategically towards urban sustainability, “The most essential aspect is to clearly understand the interrelationships between system, success and strategic levels, to provide the foundation for identifying appropriate actions and tools” (Robèrt et al. 2010, 29).

To keep the interconnectedness of the research question to the relevant systems that it aims to effect, the 5LF was used systematically to organize and scope the research topic and the research questions across three nested systems: the global sustainability challenge, the urban sustainability challenge, and the system of SI within it (Figure 3).
### 1.4.5 Research question

**Research question: What are the ingredients needed to support the Cohesion of Sustainability Initiatives Across Silos in the city arena?**

In line with the methodological approach (section 2.2), the overarching research question was kept large and open-ended, while the general term of “ingredients” allowed space for diverse insights to emerge directly from the field of practice.

---

**Figure 3: 5LF analysis of the global and urban systems and of the research topic**

*Strategic Guidelines for sustainability that are developed within the FSSD are Backcasting from Success to plan strategically towards a long-term vision, making sure that actions are prioritized and going in the Right (sustainable) Direction, that they provide sufficient Return On Investment and that they are Flexible Platforms, i.e. stepping stones that can build on each other and not lead the process to blind alleys.

The research topic System is SI in the city working and contributing to create urban sustainability. Success within that system is defined by effective CAS for these SI. In that context, the focus of the research question is put on the Strategic Guidelines, Actions and Tools necessary to reach CAS.

<table>
<thead>
<tr>
<th>System</th>
<th>Global System: the socio-ecological sphere</th>
<th>Urban System</th>
<th>Sustainability Initiatives in the City (Research Topic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td>Sustainability: the four SPs are being met globally</td>
<td>Urban Sustainability: the four SPs are being met in the city arena</td>
<td>Cohesion Across Silos between Sustainability Initiatives</td>
</tr>
<tr>
<td>Strategic Guidelines</td>
<td>Backcasting</td>
<td>Backcasting</td>
<td>Aim of the Research Question</td>
</tr>
<tr>
<td></td>
<td>Flexible Platform</td>
<td>Flexible Platform</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Return on Investment</td>
<td>Return on Investment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right Direction*</td>
<td>Right Direction*</td>
<td></td>
</tr>
<tr>
<td>Actions</td>
<td>Various Actions (e.g. relocating food systems)</td>
<td>Various Actions (e.g. developing urban organic agriculture)</td>
<td>Aim of the Research Question</td>
</tr>
<tr>
<td>Tools</td>
<td>Various Tools (e.g. tax incentives)</td>
<td>Various Tools (e.g. permaculture workshops)</td>
<td>Aim of the Research Question</td>
</tr>
</tbody>
</table>
2 Methods

2.1 Methodological approach: Grounded theory

To choose which methods would best suit the research topic, the methodology, or the principles and ideas that informed the research design, was first addressed. The research purpose is to understand how people from different Silos interact while working for urban transformation in a way that is relevant to the field of practice. The researchers did not want to impose any certain theory on the research because the specific scope requires innovative analysis shaped on the data itself and the experimental field that is emerging. Moreover, acknowledging that the type of methods used influences the type of results found, the researchers wanted a methodology that accounts for the biases present in the research process through data collection, data analysis, and the structuring of end results. For these reasons, grounded theory was chosen as a methodology that inspired the research.

Grounded theory is a post-positivist methodological approach whereby researchers can enter the field with no pre-determined hypothesis. Characteristic to grounded theory is the process of analyzing data: initial coding and categorization of data, concurrent data generation or collection and analysis, writing memos, theoretical sampling constant comparative analysis using inductive logic, theoretical sensitivity, intermediate coding, selecting a core category, theoretical saturation, and theoretical integration (Birks and Mills 2011; Glaser 1998; Charmaz 2006).

Grounded theory provides an in-depth qualitative analysis of processes lying underneath the research question. It allows the researcher to enter the field without a pre-established theory in mind and to form a theory directly from the data (Franklin and Blyton 2011, 122). The researchers conducted interviews and analyzed data at the same time, continually refining the results throughout the research process. To build a steady analysis and form an emerging theory, interviews should be sufficient to create “saturation” of key themes, i.e. that “new data analysis returns codes that only fit in existing categories” (Birks and Mills 2011, 10). Saturation was achieved after 10 interviews.

The method used to validate grounded theory research is different than other forms of methodologies. Rather than analysis of validity, measurements of Fit, Relevance, Workability, and Modifiability (Glaser 1998) are used. These measurements are “useful for thinking about how your constructed theory renders the data” (Charmaz 2006, 182).

(1) **Fit** can be another word for validity. The question it brings is, “Does the concept represent the 'pattern of data' it purports to denote?”
(2) **Relevance** asks the question, does the theory "truly getting at what is really going on that is important to the people in the substantive area? And therefore will it have impact?"
(3) **Workability** asks to what extent we can "understand and apply a theory about a substantive area" and to what extent did the theorists "explain how the main concerns of the participants are continually resolved?"
(4) **Modifiability** means that the theory is being "modified through constant comparison, the theory does not force the data, the theory gets modified by it and the literature review modifies the theory when appropriate." (Glaser 1998, 236)
The grounded theory methodology that inspired the research design was combined with the analysis framework given by the FSSD. The lens of the FSSD made it possible to “structure information in a way that makes that information useful for planning in a complex system (Robèrt et al. 2010, 29) while providing “a vehicle to link individual decisions to the global sustainability challenges” and “move systematically toward sustainability” (Robèrt, Broman, and Basile 2013, 2). As such the Strategic Guidelines, Actions, and Tools levels were kept in mind during the data collection and data analysis processes and used to structure the conclusions.

### 2.2 Methods

#### 2.2.1 Data collection process

Data was collected through open-ended and semi-structured qualitative interviews. “Researchers generate strong grounded theory with rich data [...] the kind of data the researcher pursues depends on the topic and access” (Charmaz 2006, 14). The same guiding questionnaire was used for each interview (see appendix A), although grounded theory methods allowed for flexibility in the follow-up questions that were asked and the direction that the conversation followed.

The researchers asked broad, open-ended questions and encouraged the interviewee to tell stories and give examples (Charmaz 2006). Follow-up questions were asked to gather further elements relating to Strategic Guidelines, Actions and Tools levels of the FSSD. The interviews lasted from 30-60 minutes, and each was transcribed.

The experts in the field of practice were chosen on the basis of the following criteria. Experts were professionals who 1) work within urban transformation contexts, 2) represent an ORG dedicated to systemic change and involving bottom-up SI, 3) have several years of experience with the urban sustainability challenge and within their ORG, 4) were English speaking, 5) represent a variety of cultural settings, and 6) were available within the research time frame limitations (10/2/2014-20/4/2014).

From these criteria, 13 experts were interviewed (see appendix B). The researchers were conscious of the extent to which the type of ORG represented by the interviewees may inform the results. As an overview, most of these experts were located in western countries, among which five from North America. One expert was from Colombia and two from Israel. 12 out of 13 experts represented NPO, while one expert came from a for-profit ORG.

#### 2.2.2 Data analysis process

Following the grounded theory method, the researchers broke up the analysis into four phases according to the method suggested by Kathy Charmaz (2006). These phases are line-by-line coding, focused coding, clustering of themes, outline and writing of analytic memos (see examples for each phase in Appendix C).

**Line-by-Line Coding**

During this phase, the researchers each took four or five transcripts and individually read through all of the transcripts. They then synthesized the main idea of each sentence or paragraph into a term or phrase that are called “codes”. These codes, along with the corresponding sentence or paragraph, were then transferred to spreadsheets. When coding,
the research question was kept in mind, “What are the ingredients that support the CAS of SI?”, and the general grounded theory guiding question, “What is happening here?” (Charmaz 2006, 20). Additionally, the Strategic Guidelines, Actions and Tools levels of the FSSD were used to code and make sense of the data.

Focused Coding

During this phase, the researchers individually compared all codes between the four or five transcripts, to recognize overall patterns, or “focused codes”. The focused codes were then transferred to a word document. An overall name or “category” was given to these patterns and under each category were the excerpts from the transcripts. When doing the focused coding, kept in mind was the general question: “What patterns have we seen emerging across interviews?”

Clustering of Themes

Once the focused code categories were created, the researchers collectively discussed the overall trends or “themes” that were seen among all transcripts. All of the focused codes were written on sticky notes and put on the wall. Under each major focused code, the line-by-line codes that supported the focused codes were written. After discussing each code and seeing how they related to each other, the researchers clustered them into four main themes: Supporting Structure, Funding System, Scale, and Local Governance System. While the Supporting Structure theme was the main answer to the research question, the three other themes were seen as emerging insights relevant to the research.

Outline and Writing of Analytic Memos

The fourth phase was to create an outline of the analytic memos based on these themes. The researchers collectively spent time on each theme adding all line-by-line codes from the spreadsheet that related to the theme and organizing the codes into a narrative that made sense. An analytic memo consists of descriptive information from the interviews that support the four themes that were found and is the main portion of the results section.

2.2.3 Emerging Theory

From this process, the researchers interpreted the results and drew conclusions to the research question. Following the methodology, these conclusions led to the elaboration of a theory that directly emerged from the field of practice. This theory “explains a process or scheme associated with a phenomenon” (Birks and Mills 2011, 12). Inspired by the combination of grounded theory and the FSSD, the researchers chose to create an emerging theory. The distinction between an emerging theory and a grounded theory should be noted, as the emerging theory synthesizes the ideas and visions of success rather than the hurdles and challenges of current reality. It consists of a vivid description and visuals (see section 4.2), which offers an “imaginative interpretation” (Charmaz 2006, 127).

In a further stage the theory was related and confronted to relevant literature in the academic field as a way to discuss and guide more in-depth analysis of the emergent findings.

The last stage of the research process was to frame the emerging theory within the FSSD, as a way to build a strategic understanding of the research conclusions (see section 4.4). The
findings were then structured within the Strategic Guidelines, Actions and Tools needed to support CAS.

Figure 4: Research methods process
3 Results

This section presents the results of the research according to answers collected, coded and analyzed from 13 interviews with experts in the field of practice. It is separated into three main parts. The first two parts present elements that emerged complementary to the research question, while the third part directly relates to the research question.

The first part is a collection of the codes that confirm the existence of the Silo-Effect and the need for CAS in the efforts towards a sustainable city. The second part reports three themes that emerged parallel to the research question as relevant pre-requisite to consider when looking at CAS. The third part is the core of the result section presenting the main ingredients supporting CAS that were clustered from the data collection and analysis.

Each sub-section of the results is presented in the following format: introduction of the topic of the sub-section, presentation of the main findings and ideas supported by the experts (hereafter referred to as “In #x”), selected quotations and relevant examples structured in tables, and summary of the sub-section. Further analysis and interpretation of the results is intentionally left for the discussion (see section 4).

3.1 Silo-Effect and the need for Cohesion Across Silos

The following results confirm the existence of a Silo-Effect between SI in the field of practice, and the need for CAS in the urban arena. These initial findings confirm the initial assumption that the research question is based on and give a framing to the answers presented in the further parts of the result section.

3.1.1 The Silo-Effect in the urban sustainability challenge

All experts confirmed the existence of the Silo-Effect in sustainability efforts in cities. One way of describing it was that SI in the city are “having fundamentally different conversations” (In #7). An example was given of two movements in Boston focusing on different parts of the sustainability challenge, showing that there is often a split between social and environmental sustainability approaches.

However experts pointed out that the expression Silo-Effect should not be seen necessarily as a bad thing, as it only speaks to the specialization of the different Initiatives: “The Silo-Effect is sort of a judgmental term. That’s not bad” (In #7). Indeed, there is a necessary task specialization in modern western society; it is precisely this situation that encourages the Silo-Effect between SI (In #13). The Silo-Effect was also seen as the result of a natural individualistic pattern in current societies (In #5), and an inherent part of the culture when ORGs and experts often come with a baggage of ego (In #4 and In #10).

“The Transition Town Network puts the environment in the center, and the City Rights Network puts people in the center […] This is a huge split in the progressive movement in the US in general; some people are really worried about climate change and think it is the only issue you should be concerned with, and others are saying there is a whole population that is being left out, and if you don’t include them in the conversation, you’ll never make any changes.”(In #7)
“Western society, by structural design, encourages separations and silo’s [...] The way we’ve structured things, the way incentives are created, the way the decision making happens, from early education, we get sent into silos that have to do with, different disciplines, different subject area’s [...] First you specialize, and become an expert in a certain area. And then get together with other experts in that area who you talk to.” (In #13)

“The major reason for silos is that it is the norm. It is easier to assume that you have your goal, and it’s a singular goal that you set out to accomplish. And it would be abnormal in our current society to assume that you can share the burden with other people. [...] We believe in our own methodologies and disagree with others. So it’s hard to collaborate when your methodologies are so drawn.” (In #5)

“The purpose is to make the city better, not to earn money, but sustainability organizations have a huge ego [...] have their own vision of why they are doing the most important things.” (In #4)

“It’s easy for everyone to be in their own bubble!” (In #10)

### 3.1.2 Need for Cohesion Across Silos

Several experts related to this Silo-Effect and the need for CAS. For instance, the existence of silos across initiatives creates a need for system thinking and for multi-disciplinary engagement (In #13), as well as a comprehensive and cross-silo point of view on the global sustainability action (In #6). Another way of seeing it is through the need for resilience in the urban arena, which is linked to how we can tie up together the sustainability models developed for different urban challenges (In #1). Generally, cohesion across-silo is considered a key success factor when creating urban sustainability (In #7).

“This system has an inherent siloing effect that comes from the way that we've structured most of our big systems. And the challenge becomes: how do you break through that while respecting the power, personal preference and the success of that specialization system? It happens because that’s how we’ve created our societies, and our cultures: everyone specializes. Although I think we’re in an era now, there's a renaissance of systems thinking, or being involved in multiple things.” (In #13)

“Even if you do silos’ action, for instance, you’re doing an action to save water. But you call it part of the sustainability action, that it all comes together, it belongs to a one comprehensive point of view, instead of each thing being separate [...] that is very important. It brings across the feeling that there is something comprehensive going on and not silo.” (In #6)

“The part that we don’t know how to do is the integrated whole city place-based work. That’s the part that is newest, that we are least familiar with. If we want to deal with sustainability, we have to look at the integration of these systems.”(In #7)

As such, experts consensually supported:

- The current existence of the Silo-Effect between SI in the city arena
- The need for CAS to create a successful movement towards urban sustainability.
3.2 Emerging insights to consider

This section outlines insights that emerged from the data as intrinsically linked to the main research question and general preconditions for success. They are presented ahead of the core result section because of their relevance to the main findings. Indeed, the scale of operation and the influence of the local governance and financing systems behind SI are essential to take into consideration when looking at CAS for urban sustainability.

3.2.1 Scale

Out of the 13 transcripts, the code “Scale” that links to the effective operating scale for CAS efforts in the city is mentioned 6 times. This section describes the elements linked and influenced by the scale challenge that should be considered.

The scale challenge

One of the problems that emerged from the transcripts was the scale challenge. Cities are complex systems that have complex problems. Within that context, the Silo-Effect is a result of the scale challenge at the city level. To face complex city-wide issues, SI tend to specialize on specific aspects of the urban challenge and work in silos (In #7). This situation often results in people not knowing about what others are doing on similar issues, and a lack of collaboration between Initiatives (In #9).

“This is the bigger perspective on the whole challenge, which I think is a scale challenge, and the scale challenge is: We don’t actually know how to work well with complexity. It is incredibly difficult and so when people start taking on a challenge at a certain level of scale, they need to somehow narrow the parameters of it to shrink the complexity or manage it, and that results in the Silo-Effect.” (In #7)

“In the city sometimes, people just don’t know. There is so much going on around sustainability […] Sometimes people just don’t know where to start looking.” (In #9)

Scaling down to create Cohesion Across Silos

One of the ways to deal with this complexity is by narrowing the scope of cross-silo efforts to a scale where complex issues can be easier and more effectively managed. In this sense many experts mentioned the need for cohesive movements to operate in a smaller scale (In #9). The most common scale mentioned was that of the neighborhood or village level (See glossary for definition of neighborhood). This scale is seen as a success factor because it is “more attainable, more tangible”, and is also a good place for top down and bottom up Initiatives to meet (In #6a). Other experts believed that the neighborhood is a great scale to form relationships and opportunities for co-creation in the community (In #7). Smaller scales also give visibility to the impact of local SI in the community (In #3). From a neighborhood scale, integrating Initiatives is easier because it applies a holistic or comprehensive approach to the sustainability challenge (In #5 and In #6b).

“When you see places that have done integrated problem solving […] they shrank the scale of the problem geographically to have complexity manageable.” (In #9)
“We had some very good experience with neighborhoods. We just began to develop a neighborhood process model that looks at the sub municipal level because most of the initiatives are either totally bottom up or mid-level coming from the municipality. What we’ve suggested is that there is another level that combines both the top down and the bottom up perspective, and that’s the neighborhood level.” (In #6a)

“At this level of scale, we can be in relationships with each other. If we actually don’t know what we are doing and we’re fellow learners, we actually need to be in trusting relationships with each other so as we can continue to co-create in this new territory.” (In #7)

“We need to be able to have governance systems that enable people to know the impact of decisions. So partly this is enabled by the fact that they are local [...] You’re much more likely to see the impact of the decisions around you.” (In #3)

“What we did is pick focus areas and talk about the specific opportunities to integrate. We focused on specific neighborhoods [...] look at those areas and talk as a holistic unit [...] work together on ways to grow or impact in that area.” (In #5)

“If you look at all of those things on a neighborhood level, all of the sudden you get something that is substantial and then you can connect each of this separated dots into a more comprehensive and much stronger action.” (In #6b)

Ways to scale-up successful local experiments

Though the neighborhood was a scale at which many experts found successful working, the urban sustainability challenge requires transformation at the whole city level. However, one of the limitations of operating at the local scale is its lack of ability to affect wider-scale change, which is one reason why it is more of a space for experimentation (In #3). For cohesive movements of SI to scale-up, financial capital is needed beyond the reach of the local level (In #3 and In #1).

One expert outlined that there are two techniques to extend the reach of cohesive movements of SI: replication and “Scaling Across” (In #7). Replication is the idea of “copying and pasting” ideas from one place to another. However, the replication technique can only be used for certain simple, predictable, causal problems. For more complex problems, another technique should be used. “Scaling Across” is the idea that community members, through self-organization, tackle a problem using their own practices and sets of beliefs. In this way, cohesive movements of Initiatives are context-specific and there is no successful recipe that can be exactly replicated in others places. Instead, successful experiments should be “re-localized”. Stories can be shared between contexts, and community members can pick and choose elements in other contexts that they think could work in their own community (In #7).

“There’s actually only so much that people in local communities can do, because of the scale of change that is needed. I think that communities are the place for experimentation. But in the end of the day, to get models to scale we need to extract resources from other places that are beyond that local sphere, so financial capital for example.” (In #3)

“If you can bring these things [community, local government, and funds effort] together, then you have something that could scale up very quickly.” (In #1)
“If the problem you are trying to solve has a predictable, reputable solution, the way to scale up is replication. [...] So that scale can be reached, not by taking a model that works and magnifying it so that it grows and expands, but by “scaling across”. Share what works in one place with colleagues working elsewhere, and creating a community of practice. “scaling across” it is the idea that we are re-localizing ideas, not transplanting ideas.” (In #7)

To summarize, the data showed that:

- Considering the scale of operation is crucial when working towards CAS in the city.
- There is a “Scale Challenge” associated with the complexity of the city system that SI often deal with by specializing and working in silos.
- It is easier and more effective to scale down to the neighborhood level when creating and experimenting Cross-Silo Cohesion.
- It is important to find ways to scale-up these successful local experiments to create city-wide urban transformation.

### 3.2.2 Local Governance system

Out of the 13 transcripts, the code “Local Government”, which links to the relationship the government had with community efforts for CAS, is mentioned 7 times. This section highlights the importance of and the ways of involving the LGs in this challenge.

**Key influence and role of the local governments**

Local governments are very influential actors in the transition towards urban sustainability. Sometimes they can be a barrier to CAS efforts, especially when considering the mental models behind policies. An example is given showing the contradiction between the efforts to tackle climate change and the growth paradigm in place (In #1). On the other hand, municipalities can also be “catalyzers” for change, for that reason they have an important role to play (In #2).

Experts mentioned that it is important to have the governments involved in urban sustainability projects as one key actor among the diversity of voices needed in the room. Various examples showed how the government can play an active role in projects at the grassroots local level. Renewal is an example in Vancouver, which worked on connecting the for-profit, non-profit, government and community organizing sectors (In #7).

**Successful combination of top-down and bottom-up approaches to CAS**

Some experts acknowledged the value of having LG involved to make cohesive movements of SI successful. The importance of including the public sector and the various ways it supports Initiatives was outlined (In #2 and in #7). Although it is possible and necessary to initiate CAS from the bottom-up, it is much harder without the help from the LG, and establishing a partnership between bottom up and top down is “the key for success” (In #6). Having allies in the “dominant system” is also an advantage because they can provide funds and a safe container for experimental work at the grassroots level (In #7). One expert outlines that community-based movements can connect SI across silos in a way that LGs cannot, hence both top-down and bottom-up approaches are necessary to successfully create CAS (In #1). In that context, a specific relationship and leadership between LGs and community of SI
is needed. They are initiated by the community members, while the LGs provide space, financial resources and coordination within the city.

“You need to have the vertical integration: work with the municipality and the county to be successful. [...] That’s a key in organizing the holistic way of working in the community”
(In #2)

“The transformation is not going to happen without any support [...] For example, the work with Tim Merry in Nova Scotia around the food system. There was a woman in the municipality there, who absolutely wanted to transform the food system. And that was not at all the policy of the government in the town, but she had some budget that she allocated to us and to the community of practice [...] Her role as a protector was to use assets and resources of the dominant system to quietly support the experimentation in the early stage of the pioneers, so they can learn how to do it by the time they are stable enough.” (In #7)

“There are models out for: community owned banks, transport systems, currencies, companies, local food. What gives them their resilience is how they are all tied up together and the connections between them all and that is what transition does that local governments can’t do.” (In #1)

Resources support from Local Governments

According to the experts, one of the crucial roles of the LG is the resources support to SI. Public institutions, among other actors in the city, are often able to provide large amount of resources to SI (In #3), and in various ways. For example, the mayor of London financially supported transition initiatives, as well as providing other kind of support that helped them scale-up (In #1). Other experts mentioned non-financial resources and noted that having the government involved made the process easier, giving legitimacy and continuity to SI (In #10 and In #12).

“We need larger institutions which can lever larger amounts of resources. One of those is governments.” (In #3)

“The mayor’s efforts to introduce urban agriculture across London to support with funding and all kinds of different support. That is making a real difference in the ability of lots of transition groups to scale up the work that they are doing.” (In #1)

“The endorsement of your local and federal government gives you more license to operate.” (In #10)

“In Bristol we canceled the political climate. We have the option to go to the municipality, and we know the council is going to support us. We have them on board, and it is a way to get long-term money.” (In #12)

Absence of governmental influence: community engagement and creativity

Experts noted that the absence of governmental influence allowed SI to be creative in ways they could not otherwise. When the municipality does not interfere, it can leave an open door for community groups to step in and bring in their expertise (In #2). Another element is that
when the LG does not give subsidies, there is more room for the emergence of innovative business models (In#3).

“In fact I will say in the US, the lack of a strong local public level has probably made it easier to work, to start up this kind of community processes.” (In#2)

“We’re not going to have government to provide us incentives, but how can we create novel business cases where we can still operate in this environments? Can we create long term loan? Can we pool resources together from lots of people in the community as an investment? What are the different building blocks around which will enable some of these innovations?” (In#3)

To summarize, data showed that:
- Local governments are influential actors in the city system that need to be involved in urban sustainability movements.
- Combination of top-down and bottom-up approaches to CAS is essential.
- There are various ways in which LGs can support cohesive movements, from financial to social and political capitals.
- Creative solutions and community engagement in response to government’s lack of support emerge and should be given space for in successful relationships with LGs.

### 3.2.3 Funding system

One of the unexpected patterns that emerged across all interviews (13 out of 13) is the importance of financial resources and of having a funding system that supports cohesion.

**Struggle and need for resources to fund cohesive structures in the community**

The data showed that SI in general, whether they are non-profits or businesses are in constant need to generate income. The financial insecurity of NPOs over time was mentioned repeatedly (In #1 and In #4), as well as the need for businesses to be viable and financially sustainable and independent (In #3 and In #9).

“My experience of initiatives is that generally they are not funded really well. They often depend on volunteers. That kind of situation is often burn-end [...] you need to get some paid resources in there.” (In #1)

“We are talking about NGOs. They have limited resources. They sometimes wake up and they don’t know if they will have enough budget to exist next year, or next week!” (In #4)

“How do we create environments which allow innovation and experimentation to take niche ideas and get them to a point that they are viable?” (In #3)

“For us it is really important to charge differently people that are innovative. How do they make themselves financially sustainable? [...] How do we actually create social business models nowadays? [...] how do you generate money? And how do you make that whole practice sustainable?” (In #9)
This financial situation has an influence on whether SIs are able to work together, depending on the time and resources that they can put into it additionally to their own activities (In #1). Working together with other players has to be something that ORGs clearly gain from (In #4).

“How to hold productive meetings, and how can group be as effective as possible, because they don’t have money to throw at stuff you know. There are certain bits of money that they can’t draw down.” (In #1)

“It has to be something that makes their life easier. And a goal they are already working with. Otherwise they won’t do it, they won’t survive. If they are doing it they will probably collapse if they don’t have the resource.” (In #4)

A key factor for successful CAS is the importance of having financial resources to create long-term structures for cooperation in the community (In #3, In #2, and In #4) and to make it an ongoing mechanism (In #6).

“A lot of these things require time and resources and it’s a real challenge to leverage those resources.” (In #3)

“The main problem with all capacity centers that appeared in Sweden is that they struggle for resources, the struggle of the long term existence.” (In #2)

“The challenge is to see how you can fund all that for them to move forward [...] We need to have this silver lining money. That is the challenge now. We have the infrastructure; they are willing to go further, now they need the resources.” (In #4)

“I think that the key point is to establish the mechanism. The fact that you have a center, the fact that you have coordinators and that someone is investing time and money.” (In #6)

The current funding system supports competition between Sustainability Initiatives

The data showed that the context of limited financial resources for most SI in the community creates competition for resources. Specifically as regards to NPOs that are financially dependent from public grants (In#10 and In #5). Moreover, there is the influence of individual “egos”, which adds up to the competition for funding, and does not support SI to share resources with each other.

“We look for grants on the federal level, locally and statewide, and also try to build a community of individual donors. But you can imagine individual donors are expected to give to a lot of organizations, both local and national. There is still a lot of competition [...] you are expected to collaborate, but you are also expected to compete on the same funding. It creates a bit of a conflict [...] especially in the non-profit sector.” (In #10)

“There is a fear between NPOs competing for limited resources. We are all applying for the same grants!” (In #5)

Several experts outline the mental models and drivers behind current financing systems. They explain that this situation makes it difficult to finance collaboration or integration. For
instance, the underlying economic structures that determine the relationships between capital flow and organizational structures (In #7), the individual profit, inequality (In #3) or growth paradigms (In #1) lying behind the funding policies.

“Capital. What are the economic structures underlying? Right now they are always directed to separation methods, not integration. Every organization has its own funding structure [...] The relationships of the capital to the structure is crucial. If it goes to organizations that are separate, then it is separate.” (In #7)

“How to find resources to enable those systems? Or how do we also find mechanism, or patterns of operation, or business models, to take those niche innovations and get them to scale? In a system which is inherently unequal, because we are operating on a profit-driven model. [...] banks and financial institutions [...] want to know that those alternatives will pay back on your investment.” (In #3)

“The problem is that our national government is still wedded to the idea that economic growth is the ultimate overall aim.” (In #1)

Extracting resources from the public sector

A pattern across the 13 interviewees is that resources for cohesive movements of SI can be found in partnerships with governments, presented as being mutually beneficial, and opportunitybringing. Along with significant financial resources, community Initiatives can gain other support from governments (social and political legitimacy, reputation, help with coordination, skills, communication, etc.) (See section 3.2.2). Cohesive movements of SI can help governments channel their funds into integrated cooperative structures, rather than into individual Initiatives (In #10). An example of successful funding structure for CAS is a Community Centers model in Israel (see Appendix D).

“We work very closely with them [LGs], because they recognize that our work is really reaching people in Energy Efficiency and that’s a part of their goal too. It’s a good way for them to channel Energy Efficiency funds into our organization. [...] Our mayor speaks at every event that we have. We have a lot of support and a lot of good relationships and ties with our governments.” (In #10)

Creating alternative and disruptive funding structures

A few experts (3 out of 13) advocated for the creation of new tools and structures that disrupt the mental models behind the current funding systems, so as they actually support cohesion instead of hindering it (In #3, In #7, and In #1). There is also a discussion in the field of practice about the different “ownership models” related to the financing system of cohesive structures. There is a need to go from the current individual ownership model to a collective ownership paradigm where resources are shared in the community. Examples of these disruptive and collaborative funding structures supporting CAS were presented by the experts (See Appendix E).

“Those models have to be disruptive. They need to extract resources from the rest of the systems. That is one element of that big challenge, how do we create mechanisms which disrupt and extract resources from the rest of the systems?” (In #3)
To summarize, data showed that:

- Funding CAS movements in the community is a real challenge, because SI struggle to be financially sustainable.
- The current funding systems, and the mental models behind them, support competition instead of cohesion of SI.
- CAS can be successfully supported by either extracting resources from the public sector or by creating new alternative and disruptive funding systems.

Keeping in mind these three essential dimensions that were outlined by the experts, ingredients to create CAS in the urban arena were extracted from the data.

### 3.3 Ingredients supporting Cohesion Across Silos for Urban Sustainability

According to the experts, the existence of a Supporting Structure (SS) is essential and is the place where ingredients for success are to be found. This section clusters the findings (i.e. the ingredients) in terms of the need for those SS, their role in the community, the way the SS works, and the essential elements that support their success.

#### 3.3.1 Need for a supporting structure

All experts (13 out of 13) stated the need for a physical structure in the city supporting SI in forming a cohesive movement. Experts call SS by different names. For example, Capacity Centers, Impact Hubs, Networks, Coalitions, Sustainability Community Centers (see detailed descriptions in Appendix D). Experts expressed the need for a physical platform where SI can come together, meet, share and collaborate, with a “team pushing them forward” (In #9). This platform is an external structure, separated from sustainability practitioners themselves, with a “team” that has a holistic and systemic perspective on what is happening in the city and of the urban change process (In #4 and In #2). The point in creating a SS independent from existing ORGs is to have a new arena where all SI feel engaged (In #2). The existence of a permanent physical community sustainability centers, involving paid human resources and coordination, was a key for success in experiments with CAS (In #6).

"They have a need for a place where they can come together and collaborate [...] We provide people with an actual platform to share skills, knowledge, ideas.”

"There are a lot of platforms online, but for me the difference is that it is curative and hosted by a team of people who really want these projects to be pushed forward.” (In #9)

"I wonder if this is the main role of sustainability practitioners, to be able to have this very wide and maybe a little bit shallow vision of everything, and that can also go down in specific silos. [...]I wonder if it is possible to have it in a more systematic way without having to go through a specific person, or a small team that their job is to do that?” (In #4)

"The Capacity Center in itself can be almost anything but for me it must both have a systemic approach and an understanding of change processes in itself. [...]Capacity Centers are key. They are responsible for the holistic approach around them.” (In #2)
I think that the key point is to establish the mechanism. The fact that you have a community center, a sustainability center, the fact that you have coordinators, that someone is investing time and money.” (In #6)

The data emphasized that support to CAS needs to be an ongoing process with long-term perspective and that its role in the community is constantly evolving. For example, the Impact Hub strategy is being revisited and adapted every year to the need of the community and to current urban transformation challenges (In #9). The importance of the ongoing learning role of the capacity centers in the community is crucial, and the challenge is to maintain this support to SI in the long-term.

As a team then have a strategy meeting every 3 months, when we decide if we are still on track. We hold ourselves accountable every year. We need to be able to measure and share, are we really the right people? Is the Impact Hub the right ecosystem and framework to create that change in society?” (In #9)

This result section is structured around the characteristics, purpose and role of these SS that enable CAS for urban sustainability. This is a summary of what is meant by SS, according to common characteristics described by the experts:
- The structure is an independent community-based ORG.
- It holds a systemic or holistic perspective of SI and challenges in the city.
- It provides a physical space or platform for SI to meet, share, and work together.
- It provides ongoing and long-term support in the community.

3.3.2 Role of supporting structures: Enabling Cohesion Across Silos

Communication, Coordination and Collaboration are key codes associated with SS in the way they contribute to creating CAS for urban sustainability in the community.

Coordination

Out of the 13 transcripts, the code “Coordination” linked to SS was mentioned 8 times. To create CAS for urban sustainability, a need exists for an overall coordinator, and SS can and should take this role in the community.

Need for an overall coordinator supporting Sustainability Initiatives

The need for coordination relates to the responsibility of creating and maintaining links between SI. Coordination across silos is “absolutely necessary” to support these Initiatives (In #2a). In certain situations, the municipality tries to take on this role within their own ORG, but miss the importance of coordinating SI in the community (In #2b). Difficulties exist in trying to coordinate SI across ORGs, specifically while investing time and resources (In #10 and In #12).

The role of coordinator can be filled by the SS (In #2c). It could be an individual or a team. Either way, the coordinator role should be their only position (In #4). The presence of coordinators is the main aspect of the SS (here “community sustainability center”) that builds a “mechanism” that enables CAS in the community (In #6). Within SS the role of a
coordinator can be filled by different players. In the case of the Heschel Sustainability Community Centers, the municipality is the general coordinator for the Initiative.

“If you don’t have that kind of coordination, that kind of engine in the process, it will be very difficult [...] Some kind of coordination is absolutely necessary.” (In #2a)

“I know that municipalities are working with that, but what they miss is the connection outside the municipality organization and how to coordinate.” (In #2b)

“Coordinating projects within your own organization takes a lot of time and resources, and when you involve other organizations, I don’t know if this is the most efficient from a productivity standpoint.” (In #10)

“You have all sorts of groups working in silos individually. Coordination helps: you get lots of individual gains; you create a very strategic approach. More efficient and sharing resources. Coordinated projects are also more likely to get funding. And you hopefully get more outcomes.” (In #12)

“But what you need all the time, if it is an association [...] that play the role of a capacity center because what they are doing is coordinating the local processes.” (In #2c)

“A coalition, a coordinator, going back to a team that is their role to communicate with everybody, and that they all feel fine and appreciated.” (In #4)

“I think that the key point is to establish the mechanism. The fact that you have a community sustainability center, the fact that you have coordinators.” (In #6)

**Need for coordination skills**

To create effective coordination across silos, the SS need skilled human resources to take on this role (In #1). This involves facilitation, planning, legal, resource management, processes, and participatory skills. For example, long-term planning skills (In #2), together with legal and facilitation skills that are specifically needed to coordinate (In #3). For effective coordination the facilitators should focus on the process, not only the technologies within it (In #8). Experts noted the importance of training coordinators in process-based and participatory skills (In #6).

“Once you have set up the group, it needs some sorts of skills and expertise to actually function as a group.” (In #1)

“One success criteria in working this way is that you need to have some kind of sustainable action plan or development plan on how you will work together.” (In #2)

“It still doesn’t work because you still don’t have someone who has the legal skills, and you don’t have someone who actually has the personal facilitations skills to put it all together and enable people to work together. [...] people who act as bridges to link those people together, to link the people who are really passionate.” (In #3)

“Our focus mainly is the way we facilitate, that is always a process: we are in this process with these actors [...] in that process we include a lot of methodologies that we use [...] we
implement technology to support some objectives that we do in the process." (In #8)

“The Training are actually based on the process, so for instance, each meeting is dedicated for different stage in the process. We use participatory techniques in all of our trainings.” (In #6)

Overall coordination qualities for SS described by the experts include:

- Either an individual or team should take on the role of coordinator, and preferably this is their only role.
- Electronic coordination can be used, but a physical place to meet is necessary.
- Specialized skills are necessary for effective coordination: facilitation, legal, planning, resource management, processes, and/or participatory skills.
- Special attention to process is important.

Communication

Out of the 13 transcripts, the code “Communication” linked to SS is mentioned 11 times. Three overall categories were identified: internal and external communication, shared language, and communication tools.

Need for internal and external communication

An aspect of communication that is essential for CAS is simply being aware of other Initiatives working for urban sustainability (In #2a). Many Initiatives are happening within a city, doing similar work, but having no knowledge of each other. Not only due to lack of awareness, many ORGs do not communicate for a lack of trust (In #3). The role of SS is then to have people communicating and meeting internally, as a way to be aware of each other and to build trust between members (In #9). SS have also an essential role in communicating with people inside and outside the community of SI, for people to be aware of what good examples are already happening around them (In #2b).

“Many times they don't even know what other initiatives are going on that are parallel to what they are doing” (In #2a).

“We actually need to bring people together that never had conversations before and don’t trust each other.” (In #3)

“People come to us because they feel that they are isolated and have a need for a place where they can come together and collaborate.” (In #9)

“It’s both outer and inner connection...which means you need to be one of the actors to document what's happening and expose it for anyone outside the community, both inside and outside.” (In #2b)

Shared language

One important aspect within communication is having a shared language to communicate effectively across silos. A shared language is one of the ways to create a playing field where everyone can communicate equally. Shared language is important in creating a sense of
community, which is important when people are working in many distinct sectors and fields (In #1). Another way is to work with shared principles and methodologies (In #9).

“Transition is a shared language for people from different silos and allows the same feeling of a community.” (In #1)

“There are small differences, like cultural differences […] but overall I think all the Hubs work with hosts, all the Hubs works within certain principles.” (In #9)

Communication tools

Communication tools can be both physical and electronic, for internal and external use. Interviewee #1 mentioned the many ways his ORG communicates with others internally and externally.

“We have a conference every year. We do webinars. We have a newsletters that goes out every month to about 17 000 people. We use twitter, Facebook, these kinds of tools. We just try to connect everybody together really. We put up stories and stuff every month.” (In #1)

In summary, communication is necessary component for a SS. The following characteristics, qualities, and tools were described by the experts:

- Internal communication between members within the SS to build awareness of each other and trust between members
- External communication to let the community know of what the SS is doing
- Shared language to create a sense of collaboration and shared understanding
- The internet to allow for a diversity of communication tools.

Collaboration

The code Collaboration was mentioned in 12 out of the 13 transcripts (as cooperation, partnerships) linked to SSs as a place that can effectively support those actions.

Need for collaboration across silos

The value of collaborating is to go further and unite Initiatives towards shared goals (In #4). Cross-silo and multi-disciplinary partnerships are needed as a basis for collaboration (In #6). There are numerous situations when collaboration can be mutually beneficial between SI. “Opportunities”, “shared burdens”, “efficiency”, “greater access to the community,” “trust,” “expertise” and “learn from one another” were mentioned (In #5). However collaboration can be counterproductive in terms of time and resources invested, which is why it is not always needed especially in case of overlap (In #10).

“There is an African saying, ‘If you want to go fast, go alone. If you want to go far, go together’. So there is value in collaborating. When people realize the value of that, then it happens. My experience with that is with the concept of the language and finding common goals that are able to unite everyone.” (In #4)

“You need to establish a partnership. If you want people to adopt a comprehensive point of view, then the action of a community has also to be diverse and multi-disciplinary, and
come from different disciplines and different positions. That’s the basis for the partnerships. If you only have Environmental organizations involved, you will only be addressing environmental issues.” (In #6)

“It seems like effort to collaborate kind of gets in the way [...] I don’t know if this is the most efficient from a productivity standpoint to collaborate. [...] I’m not sure that it’s necessarily a bad thing to have so many organizations and people attacking issues from different methods and different sides.” (In #10)

Creating the conditions and the atmosphere to enable collaboration

External conditions influence the ability to effectively collaborate for CAS (In #4). In regards to the atmosphere provided by SSs, common values and a safe space are important as a way to initiate and enable sharing and collaboration (In #9). This idea related to the need for creating a community feeling and trust among stakeholders (In #5). Transparency and honesty are common codes across interviews in relation to successful collaboration.

“It is a lot about creating the conditions that will allow and inspire collaboration.” (In #4)

“We try to create common values and have a safe space where you can feel that you can actually give without someone stealing your idea. We try to be extra transparent with everything.” (In #9)

“The honesty has to be a big part of the collaboration and you don’t see that most of the time, because it is uncomfortable.” (In #5)

Making collaboration efficient

To make collaboration efficient, we need to create a space where not one stakeholder dominates over another in terms of expertise and specialization. Another important enabler for collaboration is to bring some clarity and accountability for each stakeholder, which provides the condition for them to accept the investment of time, skills and resources in the collaboration process (In #4). Such transparency prevents future conflicts (In #5).

“You should find an issue that relates to everyone, but no one has specific expertise on, that is not someone’s defined territory that no one claims ownership on, but with an overarching goal that everyone can share. [...] Clarity will allow people to trust the process and take part in it. Be clear about the intention, about what each of the stakeholders can bring to the table and what is expected from them” (In #4)

“Inter-organizational collaboration could create resentment [...] Collaboration is easier across organizations when you specifically outline what people can do.” (In #5)

In summary, listed below are the collaboration components for a successful SS described by the experts:

- Cross-silo partnerships between a variety of sectors are necessary for collaboration.
- Collaborative Initiatives should have as little skill overlap as possible to prevent inefficiency and conflict.
• Honest, transparency, clarity, accountability, creating a safe space where everyone has an equal voice are all necessary to create an atmosphere for effective collaboration and to prevent future conflict.

3.3.3 How do the supporting structures work?

There is a diversity of SS (See examples of SS in Appendix D). They are different in legal status and target audience of members. They rely on different funding systems, operate in different urban, historical and cultural context , and are at different stages of development. Interviewee #2 spoke to that diversity, “The Capacity Center in itself can be almost anything”. However patterns were observed across interviews in regards to providing ongoing services in the community: the space and atmosphere, the meeting tools and opportunities, and the capacity building.

Space and atmosphere

One of the main things provided by SS is a space for SI to meet, and the appropriate atmosphere to unite them towards a shared goal (In #4). In the Impact Hub, the co-working space provided a safe area where people can share ideas and trust each other (In #9).

“It’s about creating the conditions that will allow collaboration and inspire collaboration. [...] creating this atmosphere where everybody is appreciated for what they bring.” (In #4)

“We provide the atmosphere and give the tools [...] we try to create common values and have a safe space where you can feel that you can actually give without someone hiding away and stealing your idea. We try to be extra transparent with everything.” (In #9)

Meeting tools and opportunities

Roundtables are an example of a tool being used in different SS as a way for SI to meet and collaborate (In #4). In the Heschel Community Sustainability Centers, the topic of the different roundtables is guided by the One Planet neighborhood program, which is based on crossing 10 “semantic fields”: zero carbon, zero waste, sustainable transport, sustainable materials, local and sustainable food, sustainable water, land use and wildlife, culture and heritage, equity and local economy, health and happiness (One Planet Communities 2014). Another example of meeting opportunities provided by SS like the Impact Hub is the collective coffee breaks and lunch spaces (In #9).

“We run a couple of round tables on resilient city initiatives [...] it is a good way to share and learn at the same time without being too defensive and recognizing that we all have something to share. [...] a round table can be done in very different atmospheres. We had two tables: urban development and public health [...] It is a good model, a nice project to synchronize people.” (In #4)

“We have a café area in the hub and we try to change people’s culture so people pop up or get a cup of coffee [...] And that helps these conversations to happen, just being smart and efficient about it [...] if you actually provide all the circumstances and make it so easy for them, then all they need to do is sit, eat and chat. And then people really do it.” (In #9)
Capacity building

Capacity building and competence are an important part of the support that needs to be provided to SI, allowing them to improve their impact. This capacity building support ranges from legal, financial, relational, planning and coordination skills, to personal and business development skills. Experts mentioned the trainings offered by SSs, e.g. the Impact Hub, which provides business development trainings and various other kinds of “on-demand” support, skills and tools (In #9). Competence building in the community of SI should be an ongoing support from the SSs (In #2). The Heschel Center also provides capacity building and training for their coordinators and for sustainability practitioners in the community (In #6).

“We offer programming depending on what stage of your business you is in [...] we usually advise them to join our “accelerator” when you really learn to work with people. So we also want to help them to lead by their own, to be able to get input from a few other members. [...] then we do a crash course of social start-ups, and then 2-3 hours crash course on business models.” (In #9)

“The capacity center itself would be some kind of engine both for inner process in that community and any type of link to the competence you need to support the ongoing process in the community.” (In #2)

“We developed a tool of capacity building model for neighborhoods [...] the community sustainability center which is an address for sustainable action within the community. The trainings are based on the process. Each meeting is dedicated for different stage in the process. We use participatory techniques in all of our trainings.” (In #6)

The general characteristics of a SS based on the interviews are as follows:
- A physical space with an atmosphere that is safe and comfortable
- Roundtables within the space for collaboration
- Communal coffee and lunch breaks
- Trainings and capacity building opportunities.

3.3.4 Elements that support success of supporting structures

Two conditions mentioned by all experts that foster successful SSs are good drivers and right people. A good driver can be anything that draws people together, but experts specifically mentioned having a common purpose, need or tool as good drivers. The uniting factor can be problem-based or vision-based. Overall, the experts mentioned the need to bring a diversity of actors, voices, and skills into the room. The people in the room include key players within the community, should include someone from the LG, and the “fire-souls”. For complex problems, a collective leadership style should be used.

Good drivers

Behind cohesive movements for urban sustainability, there are drivers that bring people together. To make SSs for successful CAS, 8 experts out of the 13 recognized the importance of identifying these good drivers that would unite SI.
Identifying a common purpose

The need of creating a shared purpose was mentioned as a driver to unite people; one expert believed that it should be the first step (In #8). While working for a shared purpose is needed, maybe the way to get there is working around identifying shared needs (In #9). Another successful driver is indicators for sustainability that all stakeholders can engage with and work on improving together (In #4). For another expert, awards are a very good incentive that give ambition and “hooks” various SI in (In #12).

“The fire is the purpose of everyone around the circle [...] this is a key. The first phase of a project for us is how to identify the common purpose.” (In #8)

“The whole idea is that we don’t exist for ourselves, we are only there because there is a bottom-up need.” (In #9)

“Once you create the indicators with all the stakeholders that you want to move into your collaborative initiative they will be willing to collaborate in order to improve these indicators [...] I don’t think the issue is bringing in the best tool; the thing is to create it together. Once you have that, it is easier to go forward.” (In #4)

“A good example: the European Green Capital [...] the reason why you participate, the hook, is the European Green Capital award for Bristol in the future. It is a good reason to call out people, to get them to participate. It gives ambition to the players. [...] it really succeeded to get everybody around the table.” (In #12)

Vision-based versus problem-based drivers

Several experts make a distinction between vision-based and problem-based perspectives when uniting SI together. The SS can have a clear problem-based perspective that is focused on the need for impact in the community (In #9 and In #4). However, environmental sustainability topics tend to be more problem-based, as opposed to social sustainability topics, which are more vision-based. The latest are considered as bringing a more comprehensive and motivating view of the urban challenge when uniting SI together (In #6).

“Pretty much any kind of sectors is in need of change. We focus on the impact. We ask our members to explain what is the problem that you see in society, and how do you impact that?” (In #9)

“Even if you don’t have a common goal, you need a common opportunity or thread. Either a problem that needs to be solved or something has to happen in the end, lucrative or dangerous enough, so as they would work together.” (In #4)

“And many times it comes from the social side of sustainability, community, consumerism, and these perspectives that are broader and more comprehensive. I think you can develop a more holistic point of view. [...] More people are asking, “What do we want our community to look like?” not, “what is the problem now?” (In #6)
Most of the sustainability challenges in the urban arena are related to human interactions, rather than technological problems (In #3 and In #7). In that sense, several experts put in evidence “social”, “human”, “people” or “community” related values as the best drivers to create cohesion between SI. The values being put in the center of the conversation are crucial because they determine who shows up to the discussion, and that putting the environment as the value in the center may limit the reach of the conversation (In #11a). An interesting pattern linked to that importance of putting people-related values in the conversation, is that “sustainability” is not always the best key word to bring people together in a cohesive movement. Other terms, such as equity can be used instead, which enables to think more in terms of “opportunities” (In #11b). In the same line of thought, Interviewee #4 believed there needs to be a driver, but that using the word “sustainability” may be counter-productive, instead of emphasizing solidarity values.

In summary, SS need good drivers to bring passionate people together to address a topic. Characteristics of these drivers are as follows:

- A good driver should be identified as one of the initial steps in a SS.
- The driver can be a shared purpose, need, or theme, but can be anything that can bring people from the community together.
- Drivers should be vision based rather than problem based.
- The conversation should be people-centered rather than sustainability-centered.

Who is there?

When talking about CAS, there is a general conversation in the field of practice (the topic was discussed in the 13 interviews) around two key questions. Who needs to be there? Who should be involved in this process? The different answers to this question are determinant factors of success according to the experts.
Bringing in a diversity of actors, skills and voices

Several experts considered the importance of getting a diversity of actors (e.g. SI) in the room to create a cohesive movement towards sustainability. Having a diversity of players is crucial to create a “balanced ecosystem” in the community of change makers (In #9a). In that sense, it is a space where people can benefit from the diversity of skills in the room, recognizing and celebrating the differences between different players is the basis to start working together (In #9b). Diversity is needed as a way to build a resilient community of sustainability practitioners (In #4).

“We try to understand the diversity that is needed to adapt. Making it a balanced ecosystem, that’s very much about mapping and knowing who is a part of the community right now.” (In #9a)

“It is really a space where you meet the people that you need [...] often by putting everyone together in a room, we’ll start having these conversations.” (In #9b)

“Part of your job is actually not only to bring people together, but to allow them to recognize each other [...] In order to be resilient you have to be diverse.” (In #4)

Bringing in “right people” or key players of the Sustainability Initiatives community

A factor of success mentioned is the need to bring key players of the community into the room (In #2). Creating opportunities for CAS is all about bringing in the “right people” in the process. Another point that is regularly brought up by the experts is the need to have LGs representatives involved in conversations and collaboration, because they are key players in the community of SIs (see section 3.2.2). There is the idea of bringing in the “right people.” Permanent reflection and questioning about who are the actors that should be in the room should be considered (In #9).

“If you succeed to get the right people into that community workshop you can say you have at least a better chance.”(In #2)

“Until now we were always with this idea that ‘whoever is there are the right people’. If there is a certain need you know that the people who come are going to be the ones that need to be there [...] Are we the right people? Is it the right ecosystem and framework to create that change in society?” (In #9)

Bringing in passionate individuals

Several experts mentioned the role of individuals in successful Cross-Silo Cohesion movements, and the importance of bringing people who are passionate about urban sustainability. An example of passionate people are the “fire souls”, who are the passionate people in the community of Sustainability practitioners that metaphorically “burn” for what they are doing and for change-making in the city (In #2). However, a risk exists for those SSs that only depend on these individuals. There can be an initial mapping of the right individuals within community ORGs - the “change makers” that can be leverage points in the community (In #4). Similarly, relying on passionate people is a success factor in programs run with community ORGs and businesses (In #10).
“It’s too often depending on one fire-soul. And the fire-soul disappears, the whole process dies. It is individuals behind every process. You can never forget that.” (In #2)

“There’s a long process of mapping. First to find the organization that you want to work with, and within that, the person that would be the easiest to work with. Someone that you can talk and work with because it is very easy to get blocked. You need to find these change makers. Someone who has this spark and willingness to work together [...] Sometimes more than having the right tool, having the right person, or making sure this person has the ability to move forward.” (In #4)

“We always find that the organizations that are most successful often have Green Teams lead by really passionate people.” (In #10)

**Leadership - Bringing in skilled leaders**

A theme mentioned by four experts was collective or collaborative leadership (In #7a). The reasoning behind this leadership is that different situations call for different leaders (In #7b). Heroic leadership is needed for linear problems, but not for complex. For complex problems, we need a different type, which is collective intelligence (In #7c).

“I think it’s our biggest blind spot. We get all excited about co-creations, and integrated processes, sustainability and resilience, and we still go back to the dominant model of the charismatic heroic leader. If we just had the right person running the group... we will be better off.” (In #7a)

“What are the conditions under which a heroic leadership model is useful, what are the conditions under which collective intelligence is essential? That is the key question.” (In #7b)

“But the challenges that we are facing are so complex that no one can possibly know what to do. It has to be distributed; it has to be based on collective intelligence, so the leadership model shifts.” (In #7c)

According to the experts, collective or collaborative leadership should be used within SS. The people who should be a part of the SS are people:

- From a diversity of backgrounds and sectors
- Key players in the community
- Who are passionate about urban sustainability
- Skilled leaders
4 Discussion

The above presented results were used as the basis for the discussion section, which interprets and further analyses the main findings. In the first stage, the researchers elaborated conclusions to the research question and formulated the emerging theory of this research. In a second stage, the main findings were discussed and confronted with relevant focus areas in the academic literature. The research conclusions were then framed within the FSSD to give a strategic understanding of the answers to the research question. Finally, to be thorough and self-conscious as regards to the research process, the researchers discussed the assumptions, research bias and validity of the conclusions, highlighted the limitations and gave further research perspectives.

4.1 Research conclusions

Cities and urbanization trends account for growing consumption patterns and systemic loss of natural resources that cannot be sustained if based on standard practices (Suzuki et al. 2010), which are far from optimal (McCormick et al. 2013). If managed in a sustainable way, cities offer opportunities to minimize negative impact on the natural, social and economic systems (Roseland 2013; Suzuki et al. 2010; McCormick et al. 2013). In this context, LGs efforts towards a sustainable society play a major role. Those efforts are accompanied by local grassroots movements of SI innovating, educating, and advocating for urban transformations from the bottom-up. The majority of SI in cities are not necessarily aligned with each other towards the same overall objective; they tend to use resources to compete with each other. This complex and non-optimal situation was identified as the “Silo-Effect”. The need for CAS initially assumed was confirmed by the experts interviewed in the field of practice, and led to the following research question: What are the ingredients that support the cohesion of SI across silos in the urban arena?

4.1.1 Relevant insights to the research question

While the question of the ingredients that will support the cohesion of those Initiatives from a bottom up perspective was the lens of research, three unintended themes emerged as essential for a holistic view of the question: scale, local governance and funding systems.

There is a need to address the complexity that comes with the size of the city, the neighborhood level emerged as the most effective scale to operate within. Neighborhoods were described by experts as sub-systems of the city where diverse urban challenges are represented and addressed, where size enables direct social interactions, visible impact of actions, and a sense of community and identity (see 3.2.1).

It is important to consider bottom-up and top-down efforts to CAS, and the effective role of the LG within this space. From the top-down perspective there is a need for more collaborative ways of governance, through which local governments can support the cohesion of the community of SI solving complex challenges in the city. From the bottom-up perspective, the interpretation of the results is that meaningful transformation in the urban arena must include the LGs (see 3.2.2).

Results give a critical view on the effect of the current funding systems on the cohesion of SI. What emerged is that while SI are widely dependent on external financial support, the
mechanisms with which this support is given create more competition and segregation of efforts than integration and cohesion. The funding systems for SI, and the mental models behind them, have a critical role in shifting practices from unsustainable mechanistic investments based on cost benefit analysis, to holistic and vision-based investments supporting the cohesion of SI (see 3.2.3).

4.1.2 Ingredients that support Cohesion Across Silos of Sustainable Initiatives

To address the need for more cohesive efforts of local bottom-up Initiatives, the creation of a Supporting Structure was suggested by all interviewees, whose main role would be to facilitate Communication, Collaboration and Coordination efforts between relevant actors (see section 3.3.2). Indeed, the diversity of Initiatives requires Coordination, for which the skills, mandate, resources and holistic view is absent from most ORGs. Communication support is needed to ensure a shared language, the awareness of other activities and to enhance the reach and impact of SI. The magnitude and complexity of city challenges require wide Collaboration effort between SI. The importance of having the right atmosphere and the skills needed for collaborative work emerged, together with the awareness of enablers or barriers for collaboration efforts.

With this in mind, the key findings of this research relate to the elements that will make Cooperation, Communication and Collaboration efforts between SI successful, and how to support them in the best way possible.

The examples of successful SS given by the experts are very diverse in design and governance. However patterns in the way they work emerged across interviews (see section 3.3.3): the need for a space and atmosphere that allow SI to meet with one another on a neutral ground, the facilitation of meetings and activities, and the need for capacity building in order to develop the competence of working together. Essential capacities required are relational, legal, financial, personal and business development skills that are lacking to align efforts, as well as strategic planning and coordination skills to enhance efficiency of human and financial capital. This ongoing support is provided within the SS by skilled individuals or “intermediaries” (see definition in section 4.3.4).

Experts suggest that success of those SS is tied to two key elements, which are the need to identify the good drivers that bring people together and the need to involve the right people in the conversation (see section 3.2.4). It is important to always work around a common purpose between groups, while acknowledging the individual benefits from being part of the SS. This purpose should be based on a vision that places humans in the center of conversations, rather than environmental challenges such as global warming which are more impersonal. It is essential to ensure a diverse group of actors and to be strategic about which actors are involved in the SS, thinking about the skills, connections and areas of influence that they can contribute, while creating a balanced ecosystem of actors.
4.2 Emerging Theory

The research conclusions presented above were articulated together in an Emerging Theory, which is a vivid description of the ingredients for Cohesion Across Silos of SI in the city arena.

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Let us imagine a space, a building at the neighborhood scale that exists to host the various SI and to align their efforts into a cohesive movement towards a long-term sustainable vision of this neighborhood. This vision has been co-created by all actors. It places people and social values at the center of the conversation and is represented by clear indicators to which all players are committed and accountable.

![Figure 5: Visual - Role and characteristics of the Supporting Structure](image)

This collective and independent platform welcomes on a daily basis a diverse community of SI to meet, share and work together. The structure facilitates the coordination of activities, meetings and various forms of partnerships by keeping and sharing the holistic awareness of SI in the neighborhood. It enables and gives space to the SI to invest their efforts in collaborating together on their shared passion. There is a constant communication both internally between SI and externally with the rest of the community, which is made possible by the shared language and the communication tools provided by the SS.

This platform is operated by intermediaries who are individuals skilled in collaborative work techniques and who hold a holistic perspective of the city. They offer on-going support to SI for non-profits, businesses, public officials and community members alike, who are passionate and committed to reaching the shared vision. This supporting team helps to build the relational and professional capacities needed to work in complex settings by providing trainings, tools, frameworks, facilitation and networks. They are constantly updating the collective tool-kit and organizational knowledge, while making it accessible to all type of SI at different stages of development.
The intermediaries constantly revive the common purpose, nurture an atmosphere of trust, ensure efficient interactions, protect the diversity of actors in the space, and intervene with a ‘flat’ leadership model allowing the voices of all actors to be expressed on an equal footing.

Imagine that this space would be created at the local scale in a few neighborhoods of a city, and be the basis for an integrated top-down/bottom-up approach to CAS, allowing officials from the LG to cross-pollinate those spaces, participate as equals, support rather than dictate the agenda, while also helping to scale-up successful experiments across the city. LG’s representatives in the SS would also work as a bridge to decision-makers in the city and coordinate the activities in the public institutions with the ideas, knowledge and practices that emerge from the local community while supporting bottom-up SI with resources, protection and with the necessary space for experimentation.

Figure 6: Visual - Ingredients for Cohesion Across Silos of SI in urban system - creating a SS at the neighborhood scale supported by Local Governance and Funding Systems

4.3 Confrontation of the research conclusions with existing academic literature

The contribution of this research was to use a system perspective to find the main ingredients needed to support cohesion of SI across silos, and to highlight the way they are tied together. For this reason a deeper view of ingredients is not present. The purpose of this section is to confront and discuss the research conclusions with relevant focus areas in the academic literature.

4.3.1 Appropriate scale of operation

Research conclusions outline that scale and complexity are two phenomena that many practitioners face when working towards urban sustainability. Cities are complex hubs with many factors interacting, and practitioners deal with “scale challenge” in a variety of ways. The most common among the experts was to “scale down” the problem to a manageable level.
of complexity. Many experts mentioned this level to be the neighborhood scale. The definition of what is a neighborhood varies in the literature in terms of size and function. As for this research and what makes this scale of operation successful, neighborhoods were described by the experts as sub-systems of the city where diverse urban challenges are represented and being addressed, and which size enables direct social interactions, visible impact of actions, and a sense of community and identity. Benefits of working at the neighborhood scale mentioned in previous research include finding solutions unique to the local context, empowering community members to address issues within the community, and increasing community responsibility in the community (Gurr, McCurdy, and Rose 2012).

However, questions arose as to how to scale up successful local experiments: the neighborhood is a useful scale for experimentation and community empowerment. However, SI must be scaled up to achieve global urban sustainability (Seltzer et al. 2010). Resources and support from the LG were two enablers or barriers mentioned. If an ORG has the resources and support from the government, the local movements could more easily be scaled up. Literature outlines many more factors that contribute to the success or failure of scaling up (Westley et al. 2013).

One intriguing alternative to the scaling up challenge mentioned by one of the experts was the idea of “Scaling Across”. Also termed “scaling out”, Scaling Across is an approach whereby ORGs can expand not by growing upwards, but by growing outwards through storytelling, sharing and techniques with groups of people in other ORGs, cities, and contexts. Scaling out can take many forms depending on the ORG, its goal, and external factors (Westley et al. 2013). Scaling out is functional at the neighborhood scale, through which sustainable urban neighborhoods can act as archetypes for other neighborhoods in and out of the city. Evidence has shown replication at such a scale has been successful (Luederitz, Lang, and Von Wehrden 2013).

4.3.2 Role of Local Governments

Although the research question was framed with a clear bottom-up perspective, the role of LGs supporting or hindering CAS is one of the main codes that emerged across interviews. Public institutions were highlighted as crucial and very influential players in the city. The main insights related to the role of the LGs were the many ways in which they can support cohesion – for instance by providing various kinds of resources (financial, political, social capitals, etc.) to SS. For most of the practitioners, the involvement of LGs in the process was a key factor of success, although the type of leadership and the conditions that make this involvement successful were determinant. In that sense, the data collected seems to argue for the need of a space where bottom-up and top-down approaches to CAS can meet halfway and be integrated together.

This idea is supported by several articles in the academic literature where the discussion of “bottom-up versus top-down” approaches and strategies to urban sustainability is present, and the crucial role of the communication between LGs and community Initiatives is described. “It is abundantly clear that both top-down and bottom-up strategies must be integrated effectively or neither will work well” (Cairns 2003, 1). Similarly, this meta-article on sustainable urban transformation argues for a multi-scale and multi-level sustainability approach:

“In a world increasingly recognized as being multilevel, solutions must be as well. The opposite poles of top-down approaches [...] and bottom-up approaches [...] are
clearly inadequate in providing both socially robust information and viable management solutions. (Cash et al. 2006, 9) In this respect, sustainable urban transformation is not just about local action, but how it ‘fits’ into multiple scales and levels, and the dynamic relationships that exist.” (McCormick et al. 2013, 2)

Academic literature provides an abundant complementary source of information to the findings of this research, as well as for the type of leadership needed from the LGs. Multiple articles can be found on successful relationships between institutions and community actors for urban sustainability, such as strategic participatory planning (Lahti 2013), community engagement processes and tools (Ling, Hanna, and Dale 2009; Tippett 2004), multi-level governance models (Zuindeau 2010, 420; Husson 2013), and cross-sectoral partnership building (Bryson, Crosby, and Stone 2006).

**4.3.3 Supporting funding system**

The influence of funding systems for CAS is one of the most relevant insights evidenced by this research. Successful cohesive movements towards urban sustainability need resources and creating a supporting funding system for that purpose is a crucial enabler. Indeed, according to the experts interviewed the current funding mechanisms, and the mental models behind them, do not support the cohesion of SI. On the contrary, they hinder it and encourage competition between SI in a context of struggle for resources. This data suggests that while focusing on developing ingredients and structures for CAS for urban sustainability is important, inventing a financing system that can support them is the condition sine qua non.

Mirroring the examples of disruptive ways of extracting resources that were highlighted by the experts interviewed (e.g. open source, crowd-sourcing, creative commons – Appendix E), numerous alternative financing mechanisms can be found and are further explored in the academic literature. Articles range from research on funding opportunities between public institutions and NPOs (Suarez 2010; Wang, Hawkins, and Burman 2014), to reconfiguration of resources to support urban commons (Radywyl and Biggs 2013) and grassroots financing mechanisms.

“We suggest that grassroots financing mechanisms have the potential to account for the social dimension in mobilizing resources in a green economy as well as supporting civil society and local governments to develop greater decision-making around the mobilization and allocation of sustainability resourcing. Further, by bringing together the local and the global, sustainability financing instruments could also help to create synergies and constructive partnerships among public administrations, markets, and society for finding creative and locally appropriate solutions to promote sustainable development.” (Merritt and Stubbs 2012, 1)

**4.3.4 Supporting structure**

The main theme directly addressing the research question was the importance of a supporting structure for CAS.

*Characteristics of Supporting Structures*

SS mentioned by the experts are very diverse in shape and governance. Interesting examples identified in the field of practice include the Heschel Community Sustainability Centers model, the Transition Town network structure, the Impact Hubs and the Urban Transition
Labs worldwide (Ronen and Babchik 2013; Transition Network 2013; Impact Hub Amsterdam 2014; Roorda et al. 2012). However beyond this diversity, the data suggests that all those structures support CAS by answering specific needs to the community of SI:

1) The need for a **space and atmosphere** that allows for mutual learning and a feeling of belonging. This idea is also suggested by Brown and Isaacs (1996), and by some scholars that talk about creating the attributes of a "Learning community" (Senge and Kim 2013);

2) The need for skilled facilitation performed by “**intermediaries**”. The concept of intermediary in social science relates to the individuals whose role is to create “common meaning” and shared vision between fields that do not use the same knowledge and representations (cognitive dimension of intermediation) and find solutions for isolated groups that can gain from cooperation even if they do not share the same objectives and interests (strategic dimensions of intermediation) (Nay and Smith 2002). The need for trainings in facilitation techniques that emerged from the experts interviewed can be further explored in the literature around new forms of leadership for complex challenges (Dunford and Stilger 2011; Burnes and Oswick 2011; Magzan 2012; Sales 2013). A complementary idea is to capitalize on informal opportunities (also mentioned by Brown and Isaacs 1996) to catalyze collaboration and coordination between groups;

3) The need for **capacity building** of actors. SI need competence in working together and developing relational, legal, financial, personal and business development skills that are lacking in to align their efforts. Literature helps getting further into the definition and the need for capacity building, which is about linking research to practice "translating the theories into usable methods and tools“ (Senge and Kim 2013, 5). The capacity in this context can be defined as "the ability of the key actors in the community development system to influence or shape policy, practice, and resources in ways that allow them to increase the scale, scope, and effectiveness of their activities" (Auspos, Brown, and Sutton 2008, 1). Bryson, Crosby, and Stone (2006, 46) highlight six Process Components relevant to collaborations: “forging initial agreements, building leadership, building legitimacy, building trust, managing conflict, and planning.” An open source toolkit of capacities needed to work with urban sustainability is offered by Hopkins (2011).

**Need for a structure supporting Collaboration**

The data collected suggests that to create successful cohesive movements towards urban sustainability, there is a need for collaboration of SI across silos. The interpretation of the results is that the key thing is not to create collaboration as a goal in itself, but to create the conditions that make it possible, efficient and effective, especially in a context of scarce time and resources. That is why one of the key roles of SSs suggested is to provide the space, the atmosphere, the tools and the skills enabling efficient collaboration.

The meta-article on collaboration by Bryson, Crosby, and Stone (2006) is consistent with these results, when it states that “Collaboration may be necessary and desirable, but the research evidence indicates that it is hardly easy” (Bryson, Crosby, and Stone 2006, 44). It provides a useful framework for understanding the initial conditions, process, structure, governance, contingencies, constraints, outcomes and accountability which are key success factors for CSC.

Additionally, numerous frameworks for successful collaborative structures in communities can be found in the academic literature. Enablers are specific to the type of actors they
involved. For instance research studies on non-profit collaborative networks (Martinez 2013),
public-nonprofit partnerships (Bryson 2010), cross-sector collaboration (Campbell, Hurry,
and Zidov 2011; Bryson, Crosby, and Stone 2006), collaborating services platforms (Daniel
et al. 2010), strategic partnerships between businesses and civil society ORGs (Blume,
Karell, and Outhwaite 2006).

Need for a structure supporting Coordination

According to the findings, there is a need for an overall coordinator for SI who is a skilled
intermediary with a systemic view of urban challenges and tools for collaborative work to
bring together and facilitate the common space to catalyze cooperation. This intermediary
needs to have Coordination skills to earn the respect of actors, allow them to trust the
process, and provide a sufficient return on investment to make the process viable.

Similarly the academic literature emphasizes the importance of “coordination of systemic
individual and institutional actions” in addressing sustainability challenges (Robèrt, Broman,
and Basile 2013, 1), while other authors stretch that “System-level change is, by definition,
enacted through the coordination and steering of many actors and resources, whether these
are intended or emergent features of transformation processes” (Smith, Stirling, and
Berkhout 2005, 1492). Addressing efforts from the business sector, other research stresses
that “real and lasting systemic changes can only happen through coordinated efforts and
collaborative participation of multi actors” (Moore and Manring 2009, 281). Framing and
coordinating local-level activities is seen as critical, as well as to coordinate partnerships with
actors beyond silos, which can be extremely challenging (Hargreaves et al. 2013). Further
insights in the literature are that coordination governance “should be informed by a deeper
understanding of the complex, multi-scalar, and interconnected nature of today’s global
environmental challenges” (Seitzinger et al. 2012, 787).

Need for a structure supporting Communication

Internal communication within the SS is necessary simply to be aware of others working in
the same field and towards the same goal. Literature supports this idea that having a diversity
of skills and voices can make SI more effective (Milliman and Grosskopf 2013). External
communication to others outside of the field of practice is also necessary to keep community
members informed and potentially recruit support and/or more members from the
community. Using words and phrases that resonate with people is useful in creating a sense
of community, and a shared language is especially helpful when collaborating across
different sectors or ORGs because it is a way to unite them all (Milliman and Grosskopf
2013). To reach people within and outside the SS, experts mentioned diverse communication
tools. Having physical encounters was mentioned to be important and can happen in a variety
of ways, including yearly conferences. Electronic communication included online platforms
like Twitter, Facebook, E-Newsletters, and webinars.

Key elements of success: good drivers

Research results and academic literature support the idea that creating a shared vision helps
to bring people together who are passionate about a common topic (Franklin and Marsden
2014; Senge et al. 2008; Robèrt et al. 2010). This topic can be anything, but the experts
specifically mentioned using a shared purpose, need or tool to create a cohesive movement.
Experts also mentioned that SI are being organized either around a certain problem or around a vision of success. Many current Initiatives are focused around problems within the community, but a couple of experts mentioned that Initiatives centered on vision have a more holistic approach to SI, and because of that, they are more successful.

Another aspect of creating a good driver is determining what, or who, is being put in the middle of the conversation. Many Initiatives put sustainability in the middle of the conversation, but the term “sustainability” may be confusing, misleading or unrepresentative [Strongheart, Obison, and Bordoni, 2010; Milliman and Grosskopf 2013]. An alternative is to have a social or community-oriented term or phrase that can help people relate to it, for instance “equity”, or “livable future”.

4.4 Theory framed within the FSSD

While most initiatives and interviewees do not clearly define their work within a strategic approach, the FSSD helped clarify the distinctions and interrelationships between the five levels [Robèrt et al. 2010, 29]. The aim of the research question was the Strategic Guidelines, Actions and Tools levels, which were kept in mind during the data collection and data analysis processes. The 5LF was then used to frame conclusions and the theory emerging from the field of practice in a structured and strategic way.

4.4.1 Added insights to the system and success levels

The research process led to identify complementary elements to the System and Success levels that were initially defined (see section 1.4.4) and that the research question was based upon. For the Systems level, an important insight from the research process is the interconnectedness of the system researched on with the system that offers funding to SI and the local governance system that is very influential in the city arena.

The Success level was initially lying on the assumption that for the given system (e.g. SI) the definition of success is a cohesive effort to create effective urban transformation. This assumption has been supported by the initial literature review and confirmed by the interviews conducted (see section 3.1). Additionally after further exploration in the field of practice, the following considerations were linked to the Success Level: 1) Some SI tend to confuse Success within the urban arena with the Actions and Tools that they are using, for instance by emphasizing their projects and practices as success indicators, 2) not having a clear and shared definition of Success makes collaboration and coordination efforts more difficult, and 3) the local governance and funding systems are parallel systems to which success within the system of SI is tied.

In the context of understanding the interrelationships between the different levels, the research process helped articulate the relevant actors that influence urban societies movement towards sustainability in a given city (System), while their success is to cohesively create a shift from an unsustainable urban system to a sustainable urban system (Success), and the importance to involve the municipal system (see section 3.2.2) and the funding systems (see section 3.2.3) as crucial partners and to operate at an effective scale (see section 3.2.1) (Strategic).
4.4.2 Elaboration on the Framework for Strategic Sustainable Development

To address the research question in the best way, the researchers suggest a new category to the Strategic level, called “Tactical Guidelines”, as a way to emphasize the key parallel systems that need to be considered in order to reach Success. The interconnectedness between systems requires attention to the systems that directly influence the system considered. Hence, they are tactical guidelines for success rather than strategic guidelines to prioritize actions. Those models are not yet clear, hence require experimentation (see section 4.5.2)

4.4.3 Ingredients supporting Cohesion Across Silos between Sustainability Initiatives

The FSSD was used in a strategic way to frame the Theory and elaborate recommendations to sustainability practitioners. Table 3 simplifies and organizes the key findings in the 5LF analysis, whose System is the SI within the urban system. The definition of Success within this system is to create Cohesion Across Silos between SI to be more effective in moving towards urban sustainability.

<table>
<thead>
<tr>
<th>System</th>
<th>Sustainability Initiatives in the city</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td>Cohesion Across Silos of Sustainability Initiatives</td>
</tr>
<tr>
<td>Strategic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strategic Guidelines</td>
</tr>
<tr>
<td></td>
<td>Backcasting from success</td>
</tr>
<tr>
<td></td>
<td>Financial sustainability</td>
</tr>
<tr>
<td></td>
<td>Stepping Stones</td>
</tr>
<tr>
<td></td>
<td>Neighborhood scale</td>
</tr>
<tr>
<td></td>
<td>Incorporate Coordination, Collaboration and Communication efforts holistically</td>
</tr>
<tr>
<td>Actions</td>
<td>Examples of actions within the categories:</td>
</tr>
<tr>
<td></td>
<td>Coordination</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
</tr>
<tr>
<td>Tools</td>
<td>Supporting Structure</td>
</tr>
</tbody>
</table>

**Figure 7: Final 5LF analysis framing the research conclusions: ingredients for Cohesion Across Silos of Sustainability Initiatives**

- Two suggested Tactical Guidelines need to be considered. First, addressing challenges within the current mechanisms of the Funding System, by experimenting with new models that will support collaboration and integration of SI rather than the current models that create competition and overlap. Second, experimenting with new more collaborative models in the Local Governance System where local governments would work effectively together with the SI, and support the community instead of current models where LG are not open and receptive to SI’s potential contribution for addressing urban challenges.
● Suggested Strategic Guidelines to prioritize strategies and actions are **backcasting** to keep in mind and strategically plan towards Success in the long-term perspective, make sure that actions taken are **stepping stones** towards Success, and check for any blind alleys, and identify the **appropriate scale of operation (neighborhood scale)** and ensure that activities are **financially sustainable**, because of the resources struggle and lack of flexibility of SI identified in the field of practice. The researchers want to emphasize the need to incorporate **coordination, collaboration and communication efforts** to ensure that those three pillars are accounted for in a holistic way.

● Categories of Actions are suggested for activities that if done strategically will support CAS between SI in the city. They are presented as categories because of the belief that the actions that fit this level are greater than the examples that emerged in the course of this research. Nonetheless some examples of specific actions were mentioned in the research. **Coordination** can be supported by identifying key actors, sharing plans and activities with the LG, and creating a map of initiatives. Effective **collaboration** can be supported by creating shared indicators and common goals and creating meeting opportunities. Cohesive **communication** can be supported by creating an ongoing dialogue between SI, building a shared language that will lead to a shared branding scheme, incorporating other SI as well as LG efforts in communications, and using LG media channels.

● Finally, the need for a Structure to offer that support was identified and classified as a Tool that will help the actions to occur in a cohesive manner. Some examples of tools can be seen in the emerging field of Labs, Transition Towns Initiatives Impact hubs and various other local experiments (See Appendix D).

The importance of a Supporting Structure for Cohesion Across Silos of SI is the key finding of the research, and the reason why the researchers chose to focus on the SS and provide a further analysis of the characteristics and success factors of the SS.

These recommendations are especially relevant for the Intermediaries that will operate in the SS and provide an ongoing long-term support to cohesive movements of SI. They are clustered within the three categories of actions. When supporting Communication, actions should be prioritized based on the shared language that they create between SI, while acknowledging and celebrating the different backgrounds, representations and jargons, and be based on how they protect and enable transparency and honesty as key ingredients to keep trust in the SS. Regarding Collaboration efforts, actions should be prioritized based on the extent to which they support a shared vision of success and based on how they maintain clarity and differentiation of the SI collective and individual objectives. The actions supporting Coordination efforts between SI should be prioritized based on their role in maintaining a balanced and diverse ecosystem of actors bringing a variety of skills and voices in the SS and based on their coherence with a systemic and holistic perspective of the urban sustainability change process.

The researchers stress that the elements presented as strategic guidelines are essential, while the actions and tools to achieve them are diverse and have many forms and techniques in the field of practice and in the literature. The researchers also believe that most appropriate actions and tools should be chosen and adapted by the intermediaries and the actors in the SS.
4.5 Discussion of the assumptions, research bias and validity considerations

4.5.1 To what extent Cohesion Across Silos is actually needed?

This section examines a major assumption that was spotted and discussed through the entire research process. It relates to the concept of CAS, which was defined as Success for SI in the city; however, it is important and interesting to discuss to what degree CAS is actually needed.

Indeed, a few experts spoke to the idea that alignment of SI in the city should not be an absolute need in itself. On the contrary, there is a degree to which SI should collaborate and be aligned. Some experts argue that to create transformational change, a balance needs to be found between isolation and cohesion, which has to do with the need for creativity, disruption and diversity (In #4).

“I am bringing a question to the table – to what degree do we need all these initiatives to be aligned? [...] If we don’t actually need some sort of chaos so as the initiatives would be creative and innovative enough? [...] And also what is the goal of that collaboration? Of course the first idea is to avoid them to clashing each other, avoid unnecessary work, or to help each other. [...] All the initiatives have their ability to move in different directions. From one extreme, it is very chaotic: they all go in different directions and nothing happens - you need to avoid that! But if everyone makes exactly the same thing, there are chances that we miss something. Part of the tool that should be developed is to find how to collaborate but also how to celebrate differences between the organizations and foster the diversity within that.” (In #4)

This idea of making the necessary space for diversity and disruptive innovation in the community of SI is supported by the literature around Transition Theory.

“Diversity helps avoid rigidity within the system; without it, the system could not respond flexibly to changes in its environment. [...] In the equilibrium phase, there is continuous variation and selection, but when a regime settles, it becomes the dominant selection environment and thus decreases the diversity. But a certain amount of diversity is required for us to explore a variety of innovative options instead of looking for the optimal solution. (Rotmans and Loorbach 2009, 6)

The idea is that even when a new solid alternative regime is created (in this case, a cohesive SS for sustainable city Initiatives), there needs to be a constant emergence and diversity of innovative players allowing the new sustainable system to be flexible and resilient. Another expert interviewed states that you cannot force collaborative movements, there needs to be a demand for it, which is what she calls the “fire in the middle” that brings people together (In #8). An interpretation of this idea is that to be successful, cohesion for the purpose of cohesion itself, with all the resources and the time involvement that it represents, should not be encouraged. On the contrary, there needs to be a context and a need for it in the community. Similarly, several experts supported the idea that the Silo-Effect is not necessarily a bad thing (In #9 and In #3).
In that sense, an important thing to keep in mind when considering the findings of this research work is that there is a balance to find between supporting CAS and making space for SI to be innovative and disruptive while being isolated and specialized. This research would benefit from exploring this balance and the conditions under which attempts to create CAS is successfully moving actors towards urban sustainability.

**4.5.2 Being aware of the data collection bias: The need for a supporting structure**

The idea that a SS is necessary to create CAS can be discussed in relation to the panel of experts interviewed. It is important to be aware that most experts interviewed actually represent a SS for CAS (11 out of 13). The need for a SS was a key code within the first two interviews conducted. Consequently by snowball effect, the other experts who were contacted tended to be representatives of successful or experimental SSs. This data collection process can be seen as a bias that orients the main finding regarding the need for a SS for CAS.

Another dimension of this situation is that some of these SSs that were explored are very young, and are either at the experimental or conceptual stage, like the Capacity Centers. “It’s difficult to get some evidence of whether it’s good or not to have these type of capacity centers, since they never had a real chance to work in a way that they could have been working” (In #2). Whether cohesion is improved by SSs in the city, and the reasons why, is something that is not measured yet in the field of practice and was not verified in this research. The question of bringing a measurement system or an indicator for CAS for urban sustainability was brought up several times through the research process but is not being addressed by this research. Exploring whether the ingredients found contribute to the improvement of that indicator would significantly strengthen the findings of this research. Another way to address this bias would be to conduct in-depth case studies to be able to dive deeper into each SS in their specific city context over a longer period of time, and to be able to cross the perceptions internal and external stakeholders to the structure.

**4.5.3 Validity in Grounded theory: Measurements of fit, relevance, workability, and modifiability**

**Fit** - Does the theory represent the pattern of data? To ensure the fit of the theory with the patterns found, only patterns that have emerged across the majority of interviews have been discussed and articulated into a theory. This "selection by patterns" has been applied in discussion form at the end of the line-by-line coding section and again in a quantification of the relevant quotations in the results section.

**Relevance** - Does the theory represent what is important to the people in the area? Interviewees highlighted the relevance of the questions, noting their interest in the final results, the importance to their work, and that there are experiments of this theory in the field of practice from which it is possible to learn, although there are either very recent or not long lasting examples. Some literature around collaborative efforts of NPO in a general sense also support and highlight this importance (Martinez 2013).

**Workability** - Is the theory understandable and can it be applied in the field? How does it help resolve participants’ concerns? The fact that the theory is not being tested in the field or evaluated by sustainability practitioners is a limitation dictated by the short time obligations of the research and is being addressed in the further research suggestions (see section
The theory is structured by simple language and supported by a vivid description and visuals to facilitate understanding to ease its application by sustainability practitioners. The concepts which are offered by the theory mirror the recurring themes from various experimentations in the field that try to address this challenge. The "how does it work" of some crucial elements, mainly the Funding System are still underdeveloped (see section 4.1.1). In terms of answering concerns of Urban Transformation practitioners, the theory helps by providing an overarching holistic view of the challenge, understanding what are the key systems and actors that are a part of it and offers areas for discussion and co-learning with actors. What it does not offer is the depth for each specific ingredients or the specific process or steps that should be taken by sustainability practitioners.

**Modifiability** - To what extent was the theory flexible to changes that emerged? And can it allow modification by new data? The inclusion of the LG and funding systems in the structure of the theory represent how it was flexible to changes that emerged, as well as the notions around competition between groups and scale of operations. The theory focuses mainly on key tactical issues that are essential to address and leaves the application of those tactics flexible and modifiable depending on the city context. The theory can also be further complemented by academic literature and framed within other analytical and conceptual frameworks than the FSSD.

### 4.6 Limitations and further research perspectives

#### 4.6.1 Limitations

The limitations of this research include time constraints and dividing the data analysis process between three people. Comparatively to other methodologies, a grounded theory inspired approach requires more time processing and analyzing data. For each one-hour interview, a few hours’ worth of transcribing was needed. After 13 interviews, coding and memo writing was produced within a short time frame, less than two months. Such a time frame limits the depth of analysis attainable and the amount of interviews the researchers could conduct to support the research findings. Because of the time constraints, the data analysis was split between the three group members where one person took 3 or 4 interviews to do line-by-line and focus coding. This process also limits the depth of analysis since the researchers did not individually analyze and code all transcripts.

#### 4.6.2 Further research

Further research recommendations are linked to the methodology chosen to conduct this research, the time constraints that applied, and the assumptions and biases behind the research findings that were discussed above. The following work would significantly contribute, further validate, strengthen and/or complement this research paper:

- Conduct more interviews to discuss the ingredients for CAS that were found.
- Conduct in-depth case studies of existing SSs for CAS (including the way they are funded, the influence of the LGs and the scale of operation).
- Further explore complementary insights to the research question, especially as regards to the current funding system and how it relates to the alignment or silo-ing of SI.
- Conduct a Quantitative Research process with practitioners in the field of practice, aiming to check the influence of SSs for CAS in the community.
- Conduct Action-Research in the field of practice using the main ingredients found in
this research (where a SS would be simultaneously created and researched).

- Create an indicator (or a measurement system) for cohesion, if possible and relevant as an opportunity for SI to assess and improve their impact and efficiency when working towards urban sustainability.
5 Conclusions

It is clear that the urgency to deal with society’s unsustainable practices and their consequences is constantly growing. The researchers argue that enhancing the effectiveness of Sustainability Initiatives in cities is key to addressing the urban sustainability challenge. Acknowledging the complexity of urban systems in general and of the community of Sustainability Initiatives in particular, this research outlines key guidelines and an holistic view of ingredients that aim to support the creation of more effective urban transformations by addressing the Silo-Effect and the competition between Sustainability Initiatives.

To create Cohesion of Sustainability Initiatives across silos, this research highlights the need to 1) create supporting structures that will maximize the abundant social, human, cultural and economic capitals of actors, provide a share space and support collaboration, coordination and communications efforts between Sustainability Initiatives; 2) create and experiment with new models behind the Local Government and Funding systems that will support the cohesion of Sustainability Initiatives efforts; and 3) focus experimentation on the neighborhood scale to minimize complexity and enhance flexibility of resources. The Framework for Strategic Sustainable Development is a helpful analytical framework that was used as a means to frame the research question and the key findings of this research and offer clear recommendations to Sustainability Practitioners as they keep their efforts in moving strategically towards Sustainable Cities.
References


Franklin, Alex, and Terry Marsden. 2014. (Dis) connected communities and sustainable place-making. Local Environment: The International Journal of Justice and Sustainability, 1-17. 


The Natural Step 2014. Integrated Community Sustainability Planning (ICSP): The Process. 55


Appendices

Appendix A - Questionnaire

Introduction

We are Mary (US, Louisiana), Shai (Israel) and Margot (France). We are Masters Students in the MSLS (Strategic Leadership Towards Sustainability) program in BTH, Karlskrona, Sweden - and currently working on our thesis.

Our research focuses on the Initiatives working towards sustainability within the city (all the actors within a city working towards “sustainability”) across urban challenges (waste, water, energy, community engagement, food, etc.). We think that there is a challenge: that there are a lot of Sustainability Initiatives in cities around the world doing great projects in many sectors. Looking on all the human energy that is being invested, it seems that these Initiatives are isolated from each other and could be more efficient if they worked together (the “Silo-Effect” challenge).

We want to look at this challenge from a bottom-up perspective (change that comes from the community, not from the government), and how different community-based Initiatives can work cohesively.

Questions

1. We think that this “Silo-Effect” that we described in the introduction is a challenge for Initiatives and actors working with sustainability related issues in a city context. Have you seen any examples of that challenge?
   Potential follow-up questions:
   a. In your experience, why do these Initiatives tend to work separately?
   b. What are the barriers that prevent them from working together?
   c. What do these Initiatives have to gain from working together?

2. We heard about your work (XX) from (XX), in these terms (XX) and we are very curious about the role it plays in that Silo-Effect challenge. Can you tell us more about it?
   Potential follow-up questions:
   a. Do you think it is or could be a tool to address this challenge and this “Silo-Effect” that we were talking about?
   b. If yes how?
   c. How does it work (coordination, structure, members, funding)?
   d. What role do these elements play in the success of your work? In other words, what are the conditions that make this tool effective?

3. We noticed that current “sustainable municipalities”, also try to integrate sectors/challenges in their sustainability plans. For example: integrative solutions across transport, energy, equality, green building, health...etc. What role do you think the local governments have in that Silo-Effect challenge?
   Potential follow-up questions:
   a. Do you work with the City of XX and how?
   b. How do you keep on getting this support?
c. What should be in your opinion the interaction between top-down and bottom-up approaches to that Silo-Effect challenge?

4. Is there anything that we have not been talking about, that you think is a really crucial element that we should consider?

5. Do you know of any researchers or practitioners working with this Challenge that will be valuable for us to contact?

6. Bonus: We are curious about what are you currently working with?

Thank you very much for your time!
<table>
<thead>
<tr>
<th>Interviews</th>
<th>Name</th>
<th>Date</th>
<th>Organization (Function)</th>
<th>Location</th>
<th>Duration of the interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rob Hopkins</td>
<td>2/10/2014</td>
<td>Transition Town Movement (founder)</td>
<td>Totnes, UK</td>
<td>52 minutes</td>
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<tr>
<td>2</td>
<td>Torbjörn Lahti</td>
<td>2/17/2014</td>
<td>Sustainable Sweden Association (Chairman)</td>
<td>Umeå, Sweden</td>
<td>70 minutes</td>
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<td></td>
<td></td>
<td></td>
<td>Swedish Eco-Municipality movement (founder)</td>
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<td></td>
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<tr>
<td>3</td>
<td>Che Biggs</td>
<td>2/19/2014</td>
<td>VEIL - Victorian Eco-Innovation Lab (Research officer in Distributed Systems and Climate Adaptation)</td>
<td>Melbourne, Australia</td>
<td>65 minutes</td>
</tr>
<tr>
<td>4</td>
<td>Ronny Daniel &amp; Maya Givon</td>
<td>2/22/2014</td>
<td>TNS Israel \ Life &amp; Environment</td>
<td>Israel</td>
<td>78 minutes</td>
</tr>
<tr>
<td>5</td>
<td>Torin Dunnavant</td>
<td>2/25/2014</td>
<td>Tree People (Community Engagement Manager)</td>
<td>LA, USA</td>
<td>60 minutes</td>
</tr>
<tr>
<td>6</td>
<td>Orih Ronen</td>
<td>3/20/2014</td>
<td>Heschel Center (executive director)</td>
<td>Tel Aviv, Israël</td>
<td>26 minutes</td>
</tr>
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<td></td>
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<td></td>
<td>Heschel's Local Sustainability Center (director)</td>
<td></td>
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<tr>
<td>7</td>
<td>Deborah Fricze</td>
<td>3/4/2014</td>
<td>Berkana Institute (co-president)</td>
<td>Boston, USA</td>
<td>60 minutes</td>
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<td></td>
<td></td>
<td></td>
<td>Boston Impact Initiatives (founder)</td>
<td></td>
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<tr>
<td>8</td>
<td>Carolina Escobar Mejia</td>
<td>3/12/2014</td>
<td>Somos Mas (co-founder)</td>
<td>Bogota, Colombia</td>
<td>34 minutes</td>
</tr>
<tr>
<td>9</td>
<td>Tamar Berger</td>
<td>3/25/2014</td>
<td>Impact Hub (Programme Support)</td>
<td>Amsterdam, Nederlands</td>
<td>70 minutes</td>
</tr>
<tr>
<td>10</td>
<td>Danielle Russell</td>
<td>3/28/2014</td>
<td>Sustain Dane (Communications &amp; Development)</td>
<td>Madison, USA</td>
<td>50 minutes</td>
</tr>
<tr>
<td>11</td>
<td>John Mullin</td>
<td>4/3/2014</td>
<td>Coalition for a Livable Future (ex-member of the board)</td>
<td>Portland, USA</td>
<td>60 minutes</td>
</tr>
<tr>
<td>12</td>
<td>Paul Rainger</td>
<td>4/9/2014</td>
<td>Forum for the Future (Head of the Sustainable Bristol City-Region Programme)</td>
<td>Bristol, UK</td>
<td>60 minutes</td>
</tr>
<tr>
<td>13</td>
<td>Joel Solomon</td>
<td>4/17/2014</td>
<td>Renewal Partners (President) Renewal Funds (Chairman) Hollyhock (Board Chair)</td>
<td>Vancouver, Canada</td>
<td>50 minutes</td>
</tr>
</tbody>
</table>
Appendix C – Data Analysis Process

Examples relating to each of the different stages of the Data Analysis Process were extracted from the working documents. They follow the grounded theory methodology successive coding and categorizing steps, inspired from the work of Charmaz (2006).

- **Line-by-line coding**

<table>
<thead>
<tr>
<th>Extract from Interview #6</th>
<th>Examples of Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>We had some very good experience with neighbourhoods. We just began to develop a</td>
<td>successful experience at the neighbourhood scale</td>
</tr>
<tr>
<td>neighbourhood process model that looks at the sub municipal level.</td>
<td></td>
</tr>
<tr>
<td>Because most of the initiatives are either totally bottom up, or coming from the</td>
<td>combination of top-down and bottom-up</td>
</tr>
<tr>
<td>municipality. And what we’ve suggested is that there is another level, that combines</td>
<td></td>
</tr>
<tr>
<td>both the top down and the bottom up perspective, and that’s the neighbourhood level.</td>
<td></td>
</tr>
<tr>
<td>It’s more attainable, more tangible, and that because it’s the neighbourhood level, it’s</td>
<td>neighbourhood scale = more comprehensive</td>
</tr>
<tr>
<td>more comprehensive. [...] Again if you look at all of those things on a neighbourhood</td>
<td></td>
</tr>
<tr>
<td>level, all of the sudden you get something that is substantial. And then you can</td>
<td></td>
</tr>
<tr>
<td>connect each of these separated dots into a more comprehensive and much stronger action.</td>
<td></td>
</tr>
</tbody>
</table>

- **Focused coding**

**Example of pattern identified across interviews:** Current funding systems not supporting and not adapted to collaboration

<table>
<thead>
<tr>
<th>Extracts</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>It’s hard to go to your funders and say you need to provide me with funding to lead a cultural revolution when it comes to collaboration. And we're still having a hard time getting funding for that.</td>
<td>Not easy to fund collaboration In#5</td>
</tr>
<tr>
<td>How to find resources to enable that? Or how do we also find mechanism or patterns of operation or business models of operations to take those niche innovations and get them to scale? And in a systems which is inherently unequal, because we are operating on profit driven model. Those models have to be disruptive, they need to extract resources from the rest of the systems</td>
<td>Need to find mechanisms to extract resources Mental models behind our funding systems In#3</td>
</tr>
<tr>
<td>And then the other is: capital. What are the economic structures that are underlying that group? Because right now they are always directed to separation methods, not integration. So every organization has its own funding structure.</td>
<td>Funding system : need to go from separation to integration In#7</td>
</tr>
</tbody>
</table>
- **Clustering of Themes**

Examples of themes and patterns clustered:

**Collaboration**
- Collaboration with government
- Transparency, clarity needed for collaboration
- Barriers to collaboration
- Collaboration vs. overlap
- Skills of working together
- Partnerships: mutual gain (trust, reputation, resources, efficiency, knowledge, learning…)

**Good drivers for cohesion**
- Fire in the middle
- Common purpose
- Gain for each individual actor/organization
- Vision-based vs.; problem-based
- People at the centre of the conversation
- Community engagement
- Social sustainability

- **Outline of the analytical memos (collective process)**

<table>
<thead>
<tr>
<th>Funding System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Bottom up Initiatives are constantly in Need to generate income / financial sustainability</strong></td>
</tr>
<tr>
<td>- need for financial independence</td>
</tr>
<tr>
<td>- examples of funding structures/organizations/projects</td>
</tr>
<tr>
<td>- long-term mechanisms and structures need money (coordination, space, individual operations)</td>
</tr>
<tr>
<td><strong>2. Competition for resources is a barrier to cross-silo cohesion</strong></td>
</tr>
<tr>
<td>- context of limited resources/cuts/pressure</td>
</tr>
<tr>
<td>- non-profits being in survival mode - ego inhibitor - against sharing resources</td>
</tr>
<tr>
<td>- funding systems grants mechanism supports competition</td>
</tr>
<tr>
<td><strong>3. Existence of mental models behind funding systems</strong></td>
</tr>
<tr>
<td>- mental models → it is hard to finance collaboration</td>
</tr>
<tr>
<td>- drivers for the current funding system : profit, unequal, growth, short-term, low hanging fruits</td>
</tr>
<tr>
<td>- ownership model (current vs. disruptive)</td>
</tr>
</tbody>
</table>

(...)

61
Analytical Memo on the role of Funding Systems on CAS

Struggle and need for resources to fund cohesive structures in the community
Data shows that community Sustainability Initiatives in general, whether they are non-profits or businesses, are in constant need to generate income: one of the key codes encountered was “financial sustainability” and “financial independence”.

Interviewee #1 and #4 mention the financial insecurity overtime of non-profits organizations. “I think my experience of the initiatives that I know about is that generally they are not funded really well. And they often depend on volunteers. So that kind of situation is often burn-end [...] you need to get some paid resources in there.” (Interview n°1) “We are talking about NGOs: they have limited resources. They sometimes wake up and they don’t know if they will have enough budgets to exist the next year, or the next week!” (Interview n°4)

Similarly, interviewee #3 and #9 outline the need for businesses to be viable and financially sustainable: “How do we create environments which allow innovation and experimentation to take niche ideas and get them to a point that they are viable?” (Interview n°3) “For us it is really important that we charge differently people that are innovative: how do they make themselves financially sustainable? It doesn’t mean that every business generates their own income, some do depend on subsidies. But we try to see with them how do we actually create social business models nowadays? [...] how do you generate money? And how do you make that whole practice sustainable?” (Interview n°9)

(…)

62
Appendix D – Examples of Supporting Structures

To give an idea of what supporting structures for Cross-Silo Cohesion look like and contextualize the results, several examples described by experts were chosen to be highlighted here.

The criteria for this choice is to be found in whether the experts considered the supporting structure as a successful platform as regards to creating conditions for CSC. For instance Impact Hubs were mentioned as successful structures by four distinct experts, including the interviewee working herself at the hub in Amsterdam. The current existence of the structure and the amount of data available about it was also considered; for example “Capacity Centres” are conceptualized but there is no example of current structure that vindicate this appellation.

Impact Hub - Amsterdam, Nederland

“Impact Hub is the ecosystem that makes impact-makers thrive. We create spaces that inspire, connect and empower people to realize enterprising ideas for sustainable impact. Impact cannot happen in isolation, it requires collective action. At Impact Hub Amsterdam you can access the resources, knowledge and talent to move your initiatives for a better world forward.” (Impact Hub Amsterdam 2014).

Impact Hubs are a worldwide network of for-profit organizations that provide co-working and meeting spaces for “impact makers”. They welcome businesses, mostly small size start-ups, working with urban transformation and sustainability in diverse areas, or “change sectors” in the community (Interview #9).

The Impact Hub in Amsterdam was created in 2009. It started with the idea that there is a need to support and unite the small radical change start-ups in the city of Amsterdam (roughly 780,000 inhabitants) for them to develop and scale-up. It has grown since then up to about 11 paid staff resources, 40 core members and 300 external members. The members are chosen according to the way they fit in the Hub community on the personal level, according to the impact of their specific project, and on the consideration to maintain a diverse ecosystem in the Hub. The co-working space is complemented by common leisure spaces, regular collective activities, trainings and community meetings, and a virtual platform to share ideas, knowledge and opportunities.

The funding mainly comes from membership fees, rental spaces and programs provided by the Hub, although public subsidies were received occasionally (Interview #9).

Heschel Sustainability Center - Tel Aviv (Israel)

The non-profit organization Heschel Sustainability Center is a pioneer in Israel in working both with community-based and local government movements for sustainability. There are 15 “Community Sustainability Centers” at the experimental stage currently being developed in Israel, as a multi-stake-holder model for capacity building for sustainability. One of them is based in Tel Aviv (about 400,000 inhabitants). The Sustainability Initiatives in the communities are initiating and operating the center, the physical space is provided by the local government, and the financing comes from the Israeli Ministry of Environment.
(Interview #6).
It is set at the neighbourhood level and works with 2 main platforms:
- the actual community sustainability center, which is the physical place in charge of the sustainable action within the community
- a community leadership group, with representatives from the municipality, the community businesses, residents and non-profit organizations (Interview #6).
The stake-holders from the community meet every second week for roundtables.

**“Sustain Dane” - Madison (US)**

Sustain Dane is a non-profit organization working as a learning center for sustainability in the county of Dane (Wisconsin) located in the city of Madison (about 240,000 inhabitants). They are running over 20 different programs and Initiatives for sustainability involving businesses, schools and individuals in the community - the programs range from energy efficiency campaigns to individual environmental management support, network and bridge-building and education for sustainable development (Sustain Dane 2014). They are mostly funded by the federal government, EPA, membership fees from their local business network, and a partnership with a local utility company “Madison gas and electric” (In #10).

**Renewal, Vancouver (Canada)**

Renewal is a non-profit organization working out of the regional level of Vancouver, Canada. Renewal has provided a space for collaboration between the forprofit and the nonprofit, public and private sectors working together towards social change. Its mission is to support and implement a triple-bottom line economy (Renewal 2014). Renewal’s strategy towards social change revolves around four dimensions:
1) a “whole portfolio” approach to change
2) integrated use of capital for social change
3) personal and leadership development
4) power and politics (In #13)

**Transition Town movement - global network, Totnes (UK)**

The Transition Network is a global grassroots movement that supports community empowerment and self-organization Initiatives towards a better community. Transition Town Totnes is the local branch in Totnes, UK, and its aims are to “1) explore and develop practical actions that will reduce our carbon emissions and dependence on fossil fuels, and through doing this, 2) strengthen the resilience of the communities that make up Totnes and District to withstand the shocks of peak oil, climate change / chaos and economic crisis” (Transition Town Totnes 2014).

They are achieving these aims through “advancing education and raising awareness of climate change, resource scarcity, peak oil and economic resilience; promoting individual, community and organisational commitment to a reduction in CO2 emissions, energy saving, reducing reliance upon carbon emitting energy sources, and increasing resilience to resource scarcity; and promoting sustainable development for the public benefit of the
citizens of Totnes and environs by the promotion of sustainable means of achieving economic development and regeneration in order to reduce reliance on scarce resources including oil” (Transition Town Totnes 2014).
Appendix E – Examples of alternative funding structures

There is a discussion in the field of practice about the different “ownership” and “governance” models relating to Finance and SI, and the importance of going from the current individual ownership model to a “collective ownership” paradigm.

Umair Haque in his article The Finance 2.0 Manifesto opens up a wide conversation about the new economy needed for enterprises in our time; “It’s time to reconceive finance for the 21st century” (Harvard Business School Publishing 2014).

Open Source

Open source refers to a cooperative activity, usually online, that is initiated and voluntarily undertaken by all who wish to work on it. Examples include open source software (e.g. Linux), open source media (e.g. Creative Commons), open source innovation (e.g. Hippel’s Democratizing Innovation), and open source information (e.g. Wikipedia) (James and Denhardt 2010).

“Open source as a philosophy are based on the right to redistribute, make derivate works and use different solutions for free. One fascinating thing behind open source is how it brings people together to work for a common cause without clear personal gain” (Gulliksson and Mejtoft 2011).

Open source can be a solution to increase participation in a local community in creating a sustainable society and living.

“Open source and the ideas behind the open source movement can be used to enhance sustainable behavior in a community through information on local, regional and global problems related to a sustainable society” (Gulliksson and Mejtoft 2011).

Zelenika and Pearce (2011) note that “collaborative open source appropriate technology design could significantly improve development efforts all around the world”. They offer some key insights and barriers for the implementation of Open Source technologies in the field of sustainable development.

“Open source platform can be the mechanism for communication, coordination, even collaboration” (James and Denhardt 2010)

Community Supported Funding:

“Community Supported Enterprise engages consumers as investors who pay in advance thereby creating some level of consumer commitment […] relationships have taken place in the form of bartering, volunteering, asking friends to become members or offer small loans” (White 2013). There is a new range of Community Supported Enterprises that are also producing diverse economic activity which benefits and transforms participants (White 2013). A great example of this is the REconomy Project in the UK offers 20 sustainable business models of enterprises who are “financially viable trading entity that fulfils a real community need, delivers social benefits and has beneficial, or at least neutral, environmental impacts.” (REconomy Project 2013).
White (2013) adds that those enterprises help consumers “prioritize vital needs around equity, collaboration, environmental stewardship and social responsibility” (Ledgerwood and Wilson 2013) explain that it is” “partly because it is holistic and integrates so many different sects—economic, social, cultural, environmental, and political—of the community”.

Some well-known examples are websites such as Wikipedia, and projects such as Kickstarter that facilitate the financial relationship between consumers or funders and the emerging enterprise.

**Financial Benefits of Co-Working space:**

More and more start-ups and small businesses are choosing to work in the crowd via “co-working” spaces where entrepreneurs rent office space, desks and access to amenities like copiers, kitchens and Wi-Fi on a part-time, full-time or drop-in basis. There are over 1,200 co-working spaces around the world, and the trend is growing.

One such example is the Impact Hub in Amsterdam, a for-profit structure which is mostly funded by the membership fees for the co-working space: it creates a model where individual Sustainability Initiatives can easily invest money both in space rental and in collaboration opportunities.

The services offered by the space are designed to be competitive financially, offering a diversity of costs that can be suited for each individual or organization, gathering up the needed elements of a work place (e.g. Wifi, Desk, creative atmosphere, place to eat and relax etc.) into a compact and flexible space.

Some other benefits are in the financial Equivalents of Networking, matchmaking of skills, expertise and partners, mentoring and a link to an investor network, including specialists services as well as media promotion opportunities.