ABSTRACT

Sustainable development most prominently entered the global political arena in 1987 in a report from the United Nations Commission on Environment and Development, also known as the Brundtland report. In response to the concept of sustainable development, a vast array of ideas, concepts, methods and tools to aid organizations and governments in addressing the socio-ecological problems has been developed. Though helpful in many contexts, the multitude of such support also risks creating confusion, not the least since there is no generally endorsed, overriding and operational definition of sustainability. Thus, there is a growing need for such a definition and for an understanding of how these ideas, concepts, methods and tools relate to sustainability and to each other. A framework for strategic sustainable development (FSSD) has been developed over the last 20 years to create such a unifying structure. The aim of this research is to contribute specifically to the social sustainability definition of this framework.

The research follows the Design Research Methodology. First, the social dimension of the FSSD as it stands currently was examined and described, as was the general field of social sustainability. Then, a new approach to the social side of the FSSD was created.

The studies revealed that the field of social sustainability, in general, is vastly under-theorized and under-developed, and that a clear framework is important and desired. They also laid out in which ways specifically the structure of the FSSD could be used to further develop the social dimension of strategic planning and innovation, and that currently this aspect of the FSSD is relatively under-developed. This assessment was followed by a first attempt at a clearer definition of social sustainability.

Based on these explorations, this research suggests five principles as a hypothesis to be used as a definition of social sustainability. The key terms are 'integrity', 'influence', 'competence', 'impartiality' and 'meaning'. For validity purposes the results were cross-checked with other approaches and theories. The validity check shows that similar key-terms have been found by other researchers.

In conclusion, this research contributes with a hypothesis for a clearer definition of social sustainability, which is general enough to be applied irrespective of spatial and temporal constraints, but concrete enough to guide decision-making. This is a contribution to systems science in the sustainability field and it is a step towards creating an enhanced support for strategic planning and innovation for sustainability. Further testing and refinement of this theoretical foundation, and bringing it into practical use, will be the subject of the continued studies.
The Social Dimension of Strategic Sustainable Development

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Sustainable development most prominently entered the global political arena in 1987 in a report from the United Nations Commission on Environment and Development, also known as the Brundtland report. In response to the concept of sustainable development, a vast array of ideas, concepts, methods and tools to aid organizations and governments in addressing the socio-ecological problems has been developed. Though helpful in many contexts, the multitude of such support also risks creating confusion, not the least since there is no generally endorsed, overriding and operational definition of sustainability. Thus, there is a growing need for such a definition and for an understanding of how these ideas, concepts, methods and tools relate to sustainability and to each other. A framework for strategic sustainable development (FSSD) has been developed over the last 20 years to create such a unifying structure. The aim of this research is to contribute specifically to the social sustainability definition of this framework.

The research follows the Design Research Methodology. First, the social dimension of the FSSD as it stands currently was examined and described, as was the general field of social sustainability. Then, a new approach to the social side of the FSSD was created. The studies revealed that the field of social sustainability, in general, is vastly under-theorized and under-developed, and that a clear framework is important and desired. They also laid out in which ways specifically the structure of the FSSD could be used to further develop the social dimension of strategic planning and innovation, and that currently this aspect of the FSSD is relatively under-developed. This assessment was followed by a first attempt at a clearer definition of social sustainability.

Based on these explorations, this research suggests five principles as a hypothesis to be used as a definition of social sustainability. The key-terms are ‘integrity’, ‘influence’, ‘competence’, ‘impartiality’ and ‘meaning’. For validity purposes the results were cross-checked with other approaches and theories. The validity check shows that similar key-terms have been found by other researchers.

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Keywords

Strategic sustainable development, Social sustainability, Sustainable innovation, Sustainable Design.
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1. Introduction

1.1. Sustainable Development

For over 50 years, scientist and other thought leaders have been trying to call attention to the degradation of the foundation for human civilization through unsustainable behaviour (Carson 1962, Meadows et al. 1972, Steffen et al. 2004, Millenium Ecosystem Assessment 2005, Stern 2007, Intergovernmental Panel on Climate Change 2007, Rockström et al. 2009). What started out with the environmental movement in the 1960s, slowly became a broader movement that acknowledged the interwovenness of people’s ecological, social and economic well-being (McKenzie 2004, Littig and Griessler 2005, Cuthill 2010).

Sustainable development (SD) most prominently entered the global political arena in 1987 in a report from the United Nations Commission on Environment and Development, also known as the Brundtland report. The report stated “Humanity has the ability to make development sustainable - to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987). In 1992, at the Earth Summit in Rio de Janeiro this definition was adopted as the universal definition of sustainable development and has since been the basis for various discussions in the international policy arena, such as the World Summit on Sustainable Development in Johannesburg in 2002 and the Rio+20 conference in Rio de Janeiro in 2012, as well as efforts on a regional level to put this idea into practice, e.g., Agenda 21.

There has been much criticism of the Brundtland definition, mainly in relation to the vagueness of what sustainability and sustainable development actually mean (e.g., Jacobs 1999, McKenzie 2004). Paehlke (2001, 7 as cited in Partridge 2005) argues that sustainable development is a concept “so amorphous that it might mean anything.” As Jacobs (1999, 24) notes, “the vagueness of the definition ... allows business and ‘development’ interests (and their government supporters) to claim that they are in favour of sustainable development when actually they are the perpetrators of unsustainabilty”. The vagueness has also led to a vast array of ideas, concepts, methods and tools to aid organizations and governments to address the socio-ecological problems. This variety of definitions, terms, approaches, methods and tools, many of them designed for specific fields only, makes the sustainability field confusing and leads to a growing need to understand how they relate to sustainability and to each other (Huesemann 2001, Robèrt et al. 2002).
1.2. Framework for Strategic Sustainable Development

In response to the vagueness and lack of clarity in the sustainability field, and in order to create a unifying structure for sustainability and processes to get there, a group of scientists has explored the possibility to develop a framework that would be helpful in this regard. The framework is designed to give guidance on strategically moving any region, organization, project or planning endeavor towards social and ecological sustainability in an economically viable way. The framework has now been under continuous development over a 20-year consensus and peer-review process including theoretical exploration, followed by refinement and testing in iterative learning loops between scientists and practitioners from business and government (see, e.g., Robèrt 2000; Broman et al. 2000; Robèrt et al. 2002; Ny et al. 2006). The framework is built on a number of core ideas:

1. In order to plan in complex systems, a clear differentiation between five different levels is helpful:

   - **The Systems level** with the overall functioning of the system;
   - **The Success level** with a definition of the objective;
   - **The Strategic level** with logical guidelines for how to strategically approach the objective;
   - **The Actions level** where every concrete action in the transition towards the objective should be assessed in the context of the strategic guidelines and then implemented and;
   - **The Tools level** with the concepts, methods and tools that are required to, e.g., systematically monitor the actions (level 4) to ensure they are strategic (level 3) to arrive at the objective (level 2) in the system (level 1).

2. In order to plan strategically:

   - More and more knowledge about the system itself (level 1) – in the case of sustainability ‘society within the biosphere’ - is not necessarily helpful in itself. It is essential to also have a robust definition of ‘purpose’ or overall objective (level 2). Such a robust definition of the objective can then provide a lens for the identification of the relevant and essential aspects of the system (Ny et al. 2006); everything in the system that is essential for arriving at the objectives should be taken into account and other aspects need not be taken into account, thereby using purpose as the system boundary.
1. Introduction

- Backcasting, meaning departing in planning from an imagined point of success in the future and searching for smart step-by-step approaches to get there from the current situation, is a key element. It is especially helpful when the problem to be addressed is complex and the dominant trends are part of the problem. (Robinson 1982, 1990, Dreborg 1996, Quist 2007). One can backcast from scenarios or principles. In the sustainability context it is more helpful to backcast from a principle-based definition of success (Ny et al. 2006).

3. In order to plan for sustainability:

- It is helpful to understand that ‘sustainability’ is a term that has become relevant only as a consequence of humanity’s systematic contributions to un-sustainability, when the limits of the system are challenged or overstepped. Thus, sustainability is defined as boundary conditions or constraints for re-design, where success is defined as eliminating the actions that violate the boundary conditions for sustainability.

- To derive the boundary conditions for sustainability, it is therefore essential to identify the various overriding mechanisms by which society is systematically eroding the social and ecological systems. What are the fundamental mechanisms of un-sustainability and how can such be used as exclusion criteria for re-design of society with its organizations? Together, these mechanisms should explain and cover the myriad of negative impacts. This would allow for a creative search

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1 First, given differing values, it can be difficult for large groups to agree on relatively detailed descriptions (scenarios) of a desirable distant future. Second, given technological and cultural evolution, which keep changing the conditions for the optimal path ahead, it is best to avoid overly specific assumptions of the future too early in a process of transformation. What may seem as an optimal final solution today, may be helplessly obsolete tomorrow. Third, how do we know that the scenario that we backcast from is really sustainable in the first place if it is not assessed by robust principles? And, finally, if we backcast directly from scenarios without having them scrutinized by basic principles for sustainability, it is difficult to draw general conclusions, i.e. gain learning from one topic or organization that could be transferred to other topics and organizations. In addition, a principle-based vision is more flexible than its scenario-based counterpart because success can be achieved in a variety of ways (as long as the principles are met). Organizational learning experts observe that these types of constraints stimulate creativity, rather than hampering it. For example, Senge (2003, 5) states “understanding your constraints frees you to create”.
for alternative practices that solve the problems *upstream* in cause and effect chains (e.g., Broman et al. 2000, Holmberg and Robèrt 2000).

This leads to sustainability principles that can function as ‘boundary conditions’ when plans are developed, and assisting concepts, methods and tools are selected, coordinated and designed.

In order for sustainability principles (level 2) to work for backcasting (level 3) they should be *necessary* (but not more, to allow for ‘out-of-the-box’ creativity) and *sufficient* (to not forget essential elements of sustainability), *general* enough (to be applicable to all activities relevant to sustainability), *concrete* enough (to inspire action and provide direction) and *distinct* i.e. mutually exclusive (to allow structured analyzes and monitoring) (Ny et al. 2006).

The sustainability principles of the Framework for Strategic Sustainable Development (FSSD) in their current form (the first three dealing with ecological sustainability, and the fourth addressing social sustainability which will be returned to) are:

In the sustainable society, nature is not subject to systematically increasing...

1. ...concentrations of substances extracted from the Earth’s crust,
2. ...concentrations of substances produced by society,
3. ...degradation by physical means

And in that society...

4. ...people are not subject to conditions that systematically undermine their capacity to meet their needs

The Framework for Strategic Sustainable Development has been elaborated and refined in theory (Robèrt 1994, Holmberg and Robèrt 2000, Broman et al. 2000, Robèrt 2000, Robèrt et al. 2002, Ny et al. 2006) and the principles have been applied by a variety of business leaders (Electrolux 1994, Robèrt 1997, Anderson 1998, Nattrass 1999, Broman et al. 2000, Leadbitter 2002, Matsushita 2002, Nattrass and Altomare 2002) and policy makers (Gordon 2003, Cook 2004, Robèrt and Strauss-Kahn 2004, James and Lahti 2004) to create a bird’s-eye perspective on challenges and opportunities from a sustainability perspective. This framework has also been applied to relate various tools and concepts for sustainable development to sustainability and to each other (Robèrt 2000, Robèrt et al. 2002, Robèrt et al. 2010), including eco-design tools (Byggeth and Hochschorner 2006) and for company decision systems (Hallstedt et al. 2010), and has been taught and used to structure teaching, research and cooperation within and between academic institutions (Broman et al. 2002,

1.3. Issues in Sustainability Research

There are a few issues that are repeatedly brought up in sustainability research, that need to be addressed before diving deeper.

1.3.1. Is Sustainability not an Ethical Concept?

Many scientists claim that sustainability is an ethical rather than a scientific concept (e.g., Norton 1992, Peet and Bossel 2000, Dodds 1997). Perhaps it is both. However, the ethics seem to lie more in the commitment to sustainable development and sustainability than in what is needed for it. In that sense, the ethical stance is imbedded in the Brundtland definition itself (or other commitments of the sort). As this is the most commonly used and widely-accepted definition of SD, this research takes it to be the starting point for SD and aims to make it more concrete by examining the systems (the ecological and the social system) that need to be sustained to achieve the goal stated in the Brundtland definition. In that sense this research aims to answer the question ‘if we agree that we want sustainable development, then what can science say about what is needed to achieve it?’

1.3.2. Is a Single Definition Appropriate?

Some argue that vagueness and a pluralism of definitions are appropriate and preferable over a single definition, because of the complexity of the topic (McKenzie 2005, Kunz 2006, Dempsey et al. 2011, Boström 2012). Proponents of this stance (e.g., Lehtonen 2004, 211) argue that “different geographical and temporal scales as well as situational contexts require their own frameworks, which do not necessarily provide a coherent picture, but a mosaic of partly contradicting views of reality”. They propose that sustainability can only be defined in a local context through participatory processes, with engagement from all stakeholders (Davidson 2009, Dempsey et al. 2011). McKenzie (2004, 16-17) argues:

“Definitions broad enough to encompass all factors in all situations tend to be too broad for use in specific situations. Moreover, as definitions and indicator sets are often developed through consultation with community members as a first phase in research programs, they vary according to the needs and interests of the community in which they are developed. To
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*approach a community with a pre-existing definition and indicator set may disrupt the community’s sense of ownership of the research being undertaken.*

In connection to these sentiments, sustainability is often considered a ‘*wicked problem*’ - a problem that is complex, where uncertainty is high, where there is debate over values and where solutions are not obvious (Rittel and Webber 1973, Funtowicz and Ravetz 1993).

Jacobs (1999) criticism has already been noted above. Another question comes up with context-specific definitions. Acknowledging that in many ways we have become a global network, and if actions in one area of the world can have large effects in areas far away from the location of action, are many context-dependent definitions created by smaller communities enough to ensure that we are not creating a larger sustainability problem somewhere else?

Partridge (2005, 4) advocates against context-specific definitions:

> “It is not necessarily useful to only think of sustainability as context-dependent. While it is useful to apply the idea to a particular object (like forestry, fishing or human wellbeing for example), I want to suggest that the real potential of sustainability as an idea is as an integrating framework – a means for considering the relationships between different dimensions, rather than just assessing the sustainability or otherwise of a single element.”

Hodge and Hardi (1997, 10) add that “developing and using a clear conceptual framework for guiding the assessment process is very important. With a conceptual framework in place, indicators emerge more naturally, and can be adjusted to the needs of a given locale or set of decision makers.”

**Scenarios vs. Principles**

The principles of the FSSD are designed to be applicable, general, and concrete enough to cover all aspects of sustainability, regardless of activity or scale.

The approach to define success in a complex system in this way, i.e., by basic principles or ‘boundary conditions for design’, effectively addresses also the conservative bias that is sometimes leveled at the social sustainability field (e.g.

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2 Some sustainability scientists argue that “the scientific norms (Merton 1973) and epistemic values (Douglas 2009) governing scientific practice have not evolved to deal with wicked problems [...] (Funtowicz and Ravetz 1993, Gibbons 1999, Nowotny et al. 2001, Crow 2007, Jasanoff 2010; all cited by Miller 2011, 92)”.

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Marcuse 1998). As the state of sustainability is defined by principles rather than
the specifics of a scenario, it is not in fact a conservative state to maintain a
certain configuration; nor does it exclude a participatory approach to defining
what an organization or a community wants together (although as noted above
this is where the wickedness lies). The boundary conditions allow and
encourage groups, organizations and communities to create visions together
and they should do so in a participatory manner. However, the visions (maybe
described as scenarios) should remain within the sustainability boundaries
described in the FSSD.

1.4. Aim of this Research

The definition of sustainability in the FSSD has an ecological and a social
dimension. However, researchers and practitioners of the FSSD have found that
the social side is not as robust and operational as the ecological side. The
research presented in this licentiate thesis is part of a larger PhD research
project which aims at further developing the social dimension of the FSSD. The
research is undertaken in the Sustainability-Driven Innovation Group at the
Department of Strategic Sustainable Development. As such, the research is
situated in the context of strategic planning and product innovation and will
also investigate how such a more elaborated and refined definition of social
sustainability can be integrated with support methods and tools for strategic
planning and product innovation.

1.4.1. Research Question

The main research question is:

*How can the FSSD be further developed as regards the social dimension to better aid more concrete planning and
decision-making for sustainable innovation?*

1.4.2. Scope

This work focuses specifically on exploring social sustainability in the way
discussed in section 1.2. While a literature review of other social sustainability
approaches has been conducted to understand the field and gather inspiration

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3 Product here refers to physical artefacts, software, processes, services or combinations of these.
(See section 3.1), the main focus is on further developing the FSSD specifically (Section 3.2). There are other concepts and protocols such as Human Rights, Corporate Social Responsibility, Social Life Cycle Assessment, ISO 26000, etc., which are related to the topic of social sustainability, but have not, to date, been explored for this thesis. Once the social system has been looked at from a strategic sustainable development perspective, well-structured in line with the five levels of the FSSD, it would be possible to inform the use of these other tools and protocols just like with ecological sustainable development (Ny et al. 2006).
2. Research Methodology

The section presents brief thoughts on scientific research to elucidate the author’s stance as a researcher and presents the methods used to address the research problem described in Section 1.

2.1. About Sustainability Research

Sustainability research should here be understood as intentional research. It aims to contribute to sustainability, rather than only understand, explain and predict it. It is research for sustainability, rather than only about sustainability (e.g., see Franklin and Blyton 2011, 23). In his PhD thesis, Miller (2011) repositions sustainability science as a “science of design”. Following Simon (1996, 111), he describes the process of design as the choosing of a “course of action aimed at changing existing situations into preferred ones”. It focuses on how things should be, rather than on how things are (Miller 2011, 101).

While this might seem counter to the scientific ideals of objectivity and value-neutrality, Franklin and Blyton (2011, 27) argue:

“It is somehow ironic that sustainability researchers frequently encounter criticism because their research is intentional, value-based and driven by a desire to contribute to a better world. They are advised by colleagues that ‘good’ research is objective, value-free and dispassionate. This simply reveals a curious truth about paradigms, that they are linguistic accents: we are aware of other people’s but not our own. The existing scholarship paradigm has its own strong values that reflect those of the DSP (dominant social paradigm), and are so widely accepted as ‘normal’ that they become invisible, even with academic institutions that one might assume would challenge all such assumptions.”

As a sustainability researcher, the author of this thesis has certain values and is passionate about changing the world towards sustainability. The best way to account for this is to acknowledge it, and then, once this value based aspect is put forward, ask as neutrally and by as un-biased approaches as possible how science could contribute to this idea. This approach allows for as objective, critical and systematic research as any field of science. In this vein, what follows is the research approach, methods and critical discussion of both in the validity section.
2.2. Research Design

Maxwell (2005) has created an overarching research approach that supports the researcher in the quest to achieve clarity and overcome biases. In this model, the researcher asks him- or herself the following questions iteratively, throughout the entire research design process:

1. **Goals**: Why is this study worth doing, what issues do I want to clarify, what practices / policies do I want to influence, why do I want to do this study, and why would anyone care about the results?
2. **Conceptual framework**: What do I think is going on? What theories, beliefs, and prior research will guide/inform this research? How will I understand the people or issues I am studying?
3. **Research Questions**: What specifically do I want to understand by doing this study? What do I not know about the thing I am studying that I want to learn? What questions will my research answer, and how are these questions related?
4. **Methods**: What will I actually do in conducting this study?
5. **Validity**: How might my results and conclusions be wrong?

The goals, conceptual framework and research questions were presented in the introduction. In this section the methods and the validity will be discussed.

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**Figure 1: Research Phases. Adapted from (Blessing and Chakrabarti 2009).**
Following Miller’s view on sustainability science as a science of design, an adaptation of the Design Research Methodology by Blessing and Chakrabarti (2009) has been used as the basis of the research design. An overview of the adapted research stages is given in Figure 1.

The work presented here has focused on Descriptive Study I and the Prescriptive Study. Descriptive Study II will be the focus of the remainder of the PhD studies. The Methods section below details the activities at each phase.

2.3. Methods

The research consisted of two phases mirroring the descriptive and prescriptive study phases described above. In the first, the social dimension of the FSSD as it stands currently was examined as was the general field of social sustainability; in the second, a new approach to the social side of the FSSD was created.

2.3.1. Phase 1 – Descriptive Studies

The analysis was performed using the same generic five-level model for analysis of any systematic approach in any system around which the FSSD was originally developed as described in Section 1.2. Since founders of the FSSD were part of this work, this analysis was performed in mental modeling sessions and discussions in addition to content analysis.

In order to gain a better understanding of the social sustainability field in general and to find first ideas for Phase 2, a literature study was performed. Articles and books were identified using keywords ‘social sustainability’, ‘social sustainable development’ and then using a ‘snowballing technique’ (see Marshall 1998) to find further relevant articles. The search was ended when the snowballing led to the same resources repeatedly, so that it seemed that key resources had been identified.

2.3.2. Phase 2 – Prescriptive Study\(^4\)

Phase 2 entailed the prescriptive study, focusing on the creation of the new approach, and was therefore mainly characterized by theory building. One of the main aims of theory building is the creation of a (mental) model or conceptual system of the phenomenon to be understood and/or explained (Hanneman 1988, Jaccard and Jacoby 2010).

\(^4\) It needs to be acknowledged that the term ‘prescriptive’ in this context is not used in the sense of attempting to enforce detailed solutions, but as a label for the studies that look at what could be in terms of design support, rather than what is (descriptive).
This is also what the FSSD aims to do. Based on the above description of the intent with this work, extensive literature studies have been performed. This lead to deriving an appropriate definition of ‘the social system’ and a zero-hypothesis for social sustainability principles. This will be further tested and developed in future research. The main focus is, thus far, on level 2 of the FSSD and in later studies this definition will inform the approach to the ‘strategic guidelines’, and ‘tools’ levels of the FSSD, specifically including support methods and tools for sustainable product innovation and procurement.

2.4. Validity

According to Maxwell (2005) the validity section should discuss how one might be wrong in order to remain critical of one’s own work. While parts of the theory have been supported in other research fields such as the field of complex adaptive management, the combination of the different parts has not. Thus, there are numerous ways in which it might be wrong. Some of those are discussed in the Discussion section.

An attempt to validate the theory through empirical testing in businesses, municipalities and other organizations will be undertaken in the next phase of the PhD studies. This might lead to adjustments of the theory. As Gordon (1991, 110) points out “a good model can be expanded to include additional factors when their relevance is suspected”. Therefore, the model of social sustainability proposed here is a starting point, expandable if necessary.
3. Results

3.1. Phase 1 – Descriptive Studies

Phase 1 consisted of two descriptive studies: one of the current development of the social dimension of the FSSD and one of the social sustainability field in general. Both studies were based on literature reviews of published articles and books. The first study was also conducted with some of the authors of the original research into the FSSD.

3.1.1. Assessment of the Current Social Dimension of the FSSD

The paragraphs below detail what a critical evaluation of the FSSD reveals about the social sustainability aspects of the current framework. Since the ecological side has proven itself to be both logically robust and operationable, the findings on the social side are presented in comparison to the ecological side, so as to highlight the discrepancies.

**Systems level:** At the systems level on the ecological side, the FSSD is based on a thorough analysis of the ‘big picture’ of the ecosystems, following logical conclusions from laws of nature such as laws of thermodynamics, the conservation laws, knowledge about the biogeochemical cycles, and how the flows of resources and waste between society and natural systems can be described precisely enough to approach overriding mechanisms for how the natural system is currently eroded (Robèrt 1994, Holmberg 1995). An equal analysis for the social side is not evident from the literature outlining the FSSD. Would it be possible to explore the social system with an equally thorough analysis, thereby informing more precisely the following levels of the framework?

**Success level:** The reasoning behind the definition of ecological sustainability was described in Section 1.2. The framework’s sustainability principles are, in their current form, stated below (the first three dealing with ecological sustainability, and the fourth addressing social sustainability which will be returned to):

In the sustainable society, nature is not subject to systematically increasing...

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5 This part of the licentiate was adapted from a paper published as Missimer, M, Robèrt K–H, Broman G and H Sverdrup. 2010. Exploring the possibility of a systematic and generic approach to social sustainability. *Journal of Cleaner Production* 18(10-11):1107-1112

6 As elaborated later on in this section
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1. ...concentrations of substances extracted from the Earth’s crust,
2. ...concentrations of substances produced by society,
3. ...degradation by physical means

...and in that society...
4. ...people are not subject to conditions that systematically undermine their capacity to meet their needs.

Already before making a deeper analysis of the social system, it is possible to identify a discrepancy in the FSSD between the ecological and social side at the second level. It is obvious, that there is no reciprocal cohesion between the current phrasing of sustainability principles (SPs) 1-3 on the one hand, and sustainability principle (SP) 4 on the other. A more reciprocal and logical representation of the two systems is presented in Fig 2. From this follows the concrete gap that needs to be explored regarding the identification of overriding mechanisms by which the social system can be eroded.

![Diagram](Figure 2: The ecological and social side of the Framework for Strategic Sustainable Development – gaps and imbalances are highlighted through its visual representation.)
Starting with the Brundtland definition as something we want for humanity\(^7\) and applying the logic laid out above, it is clear that we achieve sustainability by (i) not systematically degrading the ecological system and (ii) not systematically degrading the social system (see figure 2). This would lead to two overriding principles for sustainability, namely sustainability for the ecological system on the one hand, and sustainability for the social system on the other\(^8\).

The overriding principle for ecological sustainability has already been further fleshed out into higher-order and more concrete principles (SPs 1-3), following the criteria of necessary, sufficient, general, concrete and distinct/non-overlapping (Ny et al. 2006). This is not the case for the social sustainability side. The social principle of the FSSD only provides a claimed statement of social sustainability as being a society where “people are not subject to conditions that systematically undermine their capacity to meet their needs”. What are these conditions? In the absence of an answer to that question, this definition is not concrete enough to really add to the starting point (the Brundtland definition). Furthermore, an analysis of whether this overriding description of social sustainability would follow a thorough analysis of the social system or not, is not attempted anywhere in the FSSD literature. So, exactly how, expressed as basic mechanisms, does the design and operation of our current society erode the social system?

Other levels: Since the last three levels of the FSSD are not specific to either the ecological or the social side, there is no inconsistency between them. At the strategic guidelines level, the above mentioned guidelines ought to be equally important for the social side as for the ecological side. But will those suffice on their own as overriding guidelines also for social strategies? It cannot be excluded that a more robust description of the first level (social system), leading to a more elaborate description of basic mechanisms for erosion of the social system and consequent operational principles for social sustainability (second level), will influence also the third, strategic guidelines level (and thereby the remaining two levels – actions and tools).

\(^7\) “Meeting the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987) describes the topic at a very high philosophical level. What does this actually mean in practical terms? The FSSD tries to break this definition down into operational principles that allow us to analyze and plan for a sustainable future.

\(^8\) ‘Economic sustainability’ is often mentioned as a third pillar of sustainability. However, as Daly and Farley (2004) point out the economy is a means for any objective (not an objective in itself). It therefore fits at the strategic level of this framework rather than at the success level.
3.1.2. An Assessment of the General Social Sustainability Field

After having assessed the under-development of the social dimension of the FSSD it seems to make sense to investigate the larger field of social sustainability (not just in relation to the FSSD). The following presents the overview of literature in this field.

Despite the conceptualization of sustainability as a three pillar concept that integrates social, economic and environment concerns (McKenzie 2004, Littig and Griersler 2005, Cuthill 2010), it is widely acknowledged that the social dimension of sustainability has been essentially neglected (Littig and Griersler 2005, Partridge 2005, Kunz 2006, Cuthill 2010, Dempsey et al. 2011, Vallance 2011). Spangenberg and Omann (2006, 319) state that “although as equally important as economic or environmental sustainability (United Nations, 1993), it [social sustainability] still lacks broad recognition”.

The topic has, however, gained increased attention in the last 10 years with more scholars focusing specifically on the social pillar of sustainability, discussing definitions, implications and indicators for this ‘pillar’ of sustainability (e.g., Koning 2001, Barron and Gauntlett 2002, McKenzie 2004, City of Vancouver 2005, Littig and Griersler 2005, Kunz 2006, Cuthill 2010, Dempsey et al. 2011, Boström 2012). With this increased focus on defining the social pillar, various definitions of what social sustainability actually is have been brought to the table. Table 1 on the next page provides an overview.

Some authors have elaborated their definitions. This seems to be especially the case with definitions which originate in community planning, often in participatory processes. Two of the more comprehensive elaborations come from The City of Vancouver and the work done by Barron and Gauntlett for the Western Australian Council of Social Services. The City of Vancouver (2005) identifies individual basic needs, individual or human capacity and social or community capital as the essential components of social sustainability and add the guiding principles of equity, social inclusion and interaction, security and adaptability (also see Appendix A for details). Barron and Gauntlett (2002) put forth the principles of equity, diversity, interconnectedness, quality of life as well as democracy and governance and specific characteristics that come with each of these (also see Appendix A).

Other authors, rather than providing a specific definition, or in addition to the definition, list themes or aspects of social sustainable development. The lists of themes or aspects can comprise from 4 to 43 items, depending on the author and range from broader themes such as general equity and leadership to more specific ones such as walkable neighborhoods and mixed tenure (For an overview see Appendix A).
### Table 1: Social Sustainability Definitions

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>McKenzie, 2004, 12</td>
<td>Social sustainability is a life-enhancing condition within communities, and a process within communities that can achieve that condition.</td>
</tr>
<tr>
<td>Barron and Gauntlett, 2002, vi</td>
<td>Social sustainability occurs when formal and informal processes, systems, structures and relationships actively support the capacity of future generations to create healthy and liveable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life.</td>
</tr>
<tr>
<td>Stren and Polese, 2000, 15-16</td>
<td>Social sustainability of a city is the “development and/or growth that is compatible with the harmonious evolution of civil society fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population.</td>
</tr>
<tr>
<td>Littig and Griessler, 2005, 72</td>
<td>Social sustainability is given, if work within a society and the related institutional arrangements satisfy an extended set of human needs and are shaped in a way that nature and its reproductive capabilities are preserved over a long period of time and the normative claims of social justice, human dignity and participation are fulfilled.</td>
</tr>
<tr>
<td>Sachs, 1999, 32–33</td>
<td>Social sustainability includes achieving a fair degree of social homogeneity, equitable income distribution, employment that allows the creation of decent livelihoods, and equitable access to resources and social services, [...] a balance between respect for tradition and innovation, and self-reliance, endogeneity and self-confidence.</td>
</tr>
<tr>
<td>City of Vancouver, 2005, 12</td>
<td>For a community to function and be sustainable, the basic needs of its residents must be met. A socially sustainable community must have the ability to maintain and build on its own resources and have the resiliency to prevent and/or address problems in the future.</td>
</tr>
<tr>
<td>Partridge (in Spangenberg and Omann 2006)</td>
<td>A socially sustainable society is one that is just, equitable, inclusive and democratic, and provides a decent quality of life for current and future generations.</td>
</tr>
</tbody>
</table>
Despite the increased focus on the social sustainability dimension over the last 10 years, the assessment of the field in recent years seems no different than earlier. Dempsey et al. (2011, 289) conclude that “surprisingly little attention has been given to the definition of social sustainability [...]”. There is still a relatively limited literature (Colantonio et al. 2009, Dempsey et al. 2011), a lack of a clear theoretical concept (Littig and Griessler 2005, Dempsey et al. 2011), a lack of clear understanding of the meaning and interpretation (Weingaarter and Moberg 2011) and a lack of clear indicators that help distinguish sustainable development from un-sustainable development (Omann and Spangenberg 2002). Colantanio et al. (2009, 16) assert:

“The concept of social sustainability has been under-theorised or often oversimplified in existing theoretical constructs [...]. Furthermore, no consensus seems to exist on what criteria and perspectives should be adopted in defining social sustainability. Each author or policy maker derives their own definition according to discipline-specific criteria or study perspective, making a generalised definition difficult to achieve.”

There seem to be a number of challenges:

- The social sustainability concepts are built on “concepts, such as community, society, and inclusiveness, that themselves have no clear definition (Davidson 2007, 791).”
- Social sustainability is an analytical and a normative concept, but these aspects are not always clearly separated, leading to confusion in the prioritization process (Littig and Griessler 2005).
- Objectives and indicators are frequently selected based on practical understanding rather than theory and, therefore, often reflect current political agendas as well as theoretically unfounded assumptions (Littig and Griessler 2005). Omann and Spangenberg (2002), e.g., highlight how social sustainability is approached differently in different EU countries based on the internal political conversation (emphasis on labor in Germany, consumption in the Netherlands, etc.). Sometimes, as Davidson (2009) has observed, the term social sustainability is simply used to de-scribe the current system of social welfare and policy.
- The social sciences have concerned themselves with a wide variety of social objectives, strategies and measurement instruments, but often with little consideration of the sustainability perspective (Metzner 2000 as cited in

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9 Dempsey et al. (2011) discuss social sustainability specifically in relation to urban development.
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Spangenberg und Omann 2006 and Colantonio et al. 2009). “This deficit makes it difficult to systematise the different elements responding to certain problems or project priorities, which dominate the current debate, and this in turn is a major obstacle for any attempt to prioritise among the criteria developed in an ad hoc fashion, for strategy development and assessment” (Spangenberg und Omann 2006, 320).

- Finally, there is no optimum for indicators and it is problematic to establish benchmarks (Colantonio 2007).

The above findings from the assessment of the FSSD as well the assessment of the general social sustainability literature seem to indicate that the social dimension of sustainability is still under-developed but that a clear conceptual framework is important and requested. It therefore suggests that a further development of the social dimension of the FSSD is appropriate and urgently needed. The results of the development work are presented in the next section.

3.2. Phase 2 – Prescriptive Studies - Attempting a Definition of Social Sustainability

In order to derive a definition for social sustainability useful for a backcasting from principles approach, transdisciplinary literature studies as well as conceptual modeling sessions were performed. At this stage of development only the systems and the success level of the 5 levels of the FSSD have been investigated. Therefore, only these levels are presented; the other levels will be touched upon in the discussion; all levels will be further investigated in the remainder of the PhD.

The bulk and remainder of Section 3.2 describes the parts of the social system that have been found necessary to be considered for social sustainability and the principles that are derived thereof, and, in the process, lays out the logic of the connection between system and success.

3.2.1. Approach

Before jumping into the actual results of an attempted definition for social sustainability, a few words on definitions and a systems approach are needed.

Definitions

To clarify the terminology employed in this thesis, some definitions are in order.
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Social System: Hanneman (1988, 27) states, “in the broadest sense of the term, a ‘system’ is nothing more than an ordering or relating of a set of parts into a whole. A ‘system’ is composed of both the ‘things’ (‘elements’ or ‘parts’) and the relation among them”. Hanneman (1988, 36) goes on to elaborate that in the social system “the elements of the system are individuals and the relations are relatively simply characterized as the presence /absence (or the strength of) a relation between each pair of individuals. Gordon (1991, 3) similarly states that at a basic level the parts of the system are individual human beings that are connected into a system through human relationships and interaction. This then includes all individual human beings as well as specific sub-systems such as communities, nations, institutions or companies and our interactions, which manifest themselves in direct interactions as well as more indirect, intangible ones such as cultural systems.  

Social Sustainability: “A major driving force behind society and societisation seems to be – in the broadest sense – the creation of opportunities to meet one’s needs” (Malinowski, 1944, also see e.g., Maturana and Varela 1980). In a general sense the social system seems provide the conditions for human life, potentially even well-being, similarly to how the ecological system provides conditions for life in general. How humanity can undermine this latter capacity is the focus of this research, to lay a foundation for strategic planning and design for social sustainability. Sustainability, then, is the boundary condition within which the system can continue to function and evolve, outside of which it cannot. In that sense, the definition of sustainability is not about a flourishing of human life, but about the basic conditions that is necessary for the social system to not systematically degrade.

As Biart (2002,5) states:

“A final point to pay attention to is the confusion which may arise between desirability and sustainability. The Brundtland objective leads indeed easily to focusing on how to increase welfare so that the various generations can meet their needs. This opens the way to discussions of the policies which may be desirable to optimise development. The sustainability approach is however less embracing. It aims to determine the minimal social requirements for long-term development (sometimes called critical social capital) and to identify the challenges to the very functioning of society in the long run.”

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10 Some (e.g., Stichweh 2000) claim, that at this point, the entire world is connected into one global system.
A Social Systems Approach

From a systems perspective, the links between the parts, here the social relationships and interactions, are especially important (Bossel 1999, 8; Franklin and Blyton 2010) As Hjorth and Bagheri (2006, 79) argue, “a system is recognized by the integrity and interaction of its components [....This] represents a way of understanding reality that emphasizes the relationships among a system’s parts, rather than the properties of the parts themselves”. Taking a system’s view has sometimes been interpreted to mean putting emphasis on the whole rather than the parts. However, in the social context inherent value is ascribed to the individual (part), not only for the contribution it makes to the whole. At least in Western thought agency, dignity and consciousness are believed to be located at the level of the individual human and human rights are largely assigned on this individual basis. It therefore makes sense to take both the individual and the whole system into account and the inter-relationships between the individuals that create the system.

Giddens’ theory of structuration (e.g., Giddens 1984, Stones 2005) describes something similar, although not originating from a systems perspective. His seminal sociological theory aims to overcome the traditional divide in sociology over whether the individual or the social system is the more powerful and should be the focus of sociological investigation. Giddens claims that the structure of society and agency (located at an individual level) are a duality that cannot be conceived apart from each other; social structures are comprised of human agency and also shape human agency. While Giddens distinguishes between systems and structure; the distinction is not relevant for the purposes of this thesis. What is relevant is that individual actor and agency as well as system, system links and structure are important.

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11 Partly this may stem from the fondness of organic metaphors and analogies in systems thinking literature and the challenges with transferring such analogies to the social context. In the human social context this can be easily misinterpreted as giving superiority to the community or social network over individuals or in extreme cases even totalitarianism (see e.g. Gordon 1991, 659 discussing Popper).

12 This is also supported by some conclusions in the social sustainability literature, namely that consensus has emerged that social sustainability seems to have two axis – an individual human one and a social one (Spangenberg and Omann 2006).

13 Giddens (1984) defines systems as the patterning of social relations across space and time and structures as consisting of rules and resources that constrain and enable human action while undertaking the practices, which reproduce the social system.
Additionally, when taking a systems perspective, the social system, like all living systems, can be considered a complex, adaptive system (e.g., Clayton and Radcliffe 1996). In the following the social system will therefore be examined from various angles – complex adaptive system studies, human needs theory, other social sciences, etc. and insights from these fields will be woven together.

3.2.2. Essential Dynamics of the Social System

Individual Humans Connected into a Social System

On a very fundamental level all human beings have needs that they aim to satisfy. Human needs describe in-born requirements that need to be satisfied in order for the individual to remain healthy – physically, emotionally and mentally. The satisfaction of these needs seems to be what drives so many of our actions. Various categorizations of human needs exist (Maslow 1943, Burton 1990, Max-Neef et al. 1991, Doyal and Gough 1991, Ramsay 1992), many of which overlap substantially (Chittenden 2000, Alkire 2002). Maslow’s hierarchy (1943) is probably the most well-known; Max-Neef et al.’s (1991) is a common contemporary one used in (economic and sustainable) development conversation. Max-Neef et al. devise a scheme of nine human needs: subsistence, protection, affection, creation, identity, participation, understanding, freedom, idleness. A need is, according to Max-Neef et al., constitutional and the same in all cultures (what differs are the satisfiers, i.e., choice of concrete methods or means by which the needs can be satisfied) and must be met to avoid psychological or physical ill-health. Max-Neef et al. state that if one of the human needs is in systematic short supply, this leads to “poverty” regardless of how well the other needs are being satisfied.

Most human beings have the innate capacity to satisfy their own needs. With the exception of people with certain disabilities, children for some time after birth and some people in old age, human beings are capable by themselves to satisfy their needs. At the same time, it is obvious from Max-Neef et al.’s list, that many of the needs, such as participation, affection and others can only be satisfied in community with others. So, by design, humans are a social species.

The Role of Purpose and Meaning

Humans are also a meaning-making and meaning-seeking species (e.g., see Bruner 1990 cited in Tronick 2008, Cacioppo et al 2005, Marsen 2008, Park 2011; for a review of the literature on meaning see Park 2010). In fact, this seems to be hard-wired into our brains (Baumeister and Vohs 2005). Klinger (1998, 33 as cited in Bellin 2009, 16) states, “the human brain cannot sustain
purposeless living. It was not designed for that. Its systems are designed for purposive actions, and when blocked, they deteriorate, and the emotional feedback from idling those systems signals extreme discomfort and motivates the search for renewed purpose and hence meaning.” This idea that humans are constantly looking for meaning and purpose is a concept in several disciplines, such as sociology, anthropology, and other social sciences (Kurzman 2008).\textsuperscript{14} Giddens (1984), for example speaks of structures of signification, the interpretations or meanings that individuals use to make sense of their experience, as an essential element of the social system. Frankl (e.g., 1962, 1986), based on his experience in a concentration camp, made it famous in his psychological theory and practice of logotherapy.

The concept is also mentioned in relation to social capital in complex adaptive social systems, a field which is discussed more below. Scheffer et al. (2001, 229) state, that “It is important not to neglect, however, the role of common culture and meaning in the creation of social capital, both horizontal and vertical. Particularly in the absence of a long history of reciprocity and the trust that engenders, stakeholders will often make the decision to enter into the initial reciprocities on the basis of their belief that they share representations, interpretations, and systems of meaning with the other party or parties (Nahapiet and Ghoshal 1998).”

This is also supported by studies in management, where it has been well documented that, in order to exist and strive, social systems (in this case companies) need a clear purpose (e.g., Collins and Porras 2002).

\textit{Social Systems as Complex Adaptive Systems}

Like all living systems, the social system can be characterized as a complex adaptive system (Clayton and Radcliffe 1996). Clark et al. (1995, 36) explain that “as systems evolve they usually do so in the direction of increasing complexity. By this we mean not only that the number of the participating components of the system increases but also that the pattern of interrelationships amongst these components is also becoming more elaborate – that is their number and type is increasing”. The degree of complexity is amplified by many diverse and free-willed agents in the social system. In fact, many sociologists discuss the increasing level of complexity of social life in modern society, partly through globalization and the development and spread of technology, and the difficulty this brings in coordinating our systems (Giddens 1990, 1991, Luhmann 1988). A

\textsuperscript{14} The idea is also the basis of the constructivism theory in pedagogy (see Bellin, e.g.) and the psychology of development and learning in children (e.g., Kagan 1981, Wells 2009).
complex system is inevitably characterized by uncertainty, change and surprise, which in return requires flexibility and adaptation in dealing with the system.

The research field of resilience theory, complex adaptive systems and adaptive management has emerged to study and understand the dynamics of working with complex adaptive systems (Berkes et al. 2003, Folke et al. 2005, Nelson et al. 2007). Although focused on socio-ecological systems, i.e., the interaction between social and the ecological system, it provides many insights for the social system in general, not just in relation to the ecological system. While ecological and social systems do not function entirely the same, nor can the study of resilience and adaptability be directly applied from one to the other (Adger 2000), the social system is a living system and it would therefore make sense to keep these in mind also when thinking about the social system in itself.

Adaptability or adaptive capacity is defined in the literature as the ability to manage resilience (Walker et al. 2004, 2006, Folke et al. 2005). Resilience, in return, is defined as the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks (Walker et al. 2004). It focuses on the ability to absorb and shape change as well as the ability for renewal (Berkes et al. 2003, Folke et al. 2005, Folke 2006, Nelson et al. 2007). Adger (2000) defines social resilience as the ability of human communities to withstand external shocks to their social infrastructure, such as environmental variability or social, economic and political upheaval.

The literature discusses four essential aspects of adaptive capacity and the long-term survival of socio-ecological systems:

**Diversity:** Diversity is repeatedly mentioned as an important aspect of resilience (Folke et al. 2002, Walker et al. 2006, Norberg and Cumming 2006, Chapin et al. 2010). Folke et al. (2002, 19) claim “diversity is not just insurance against uncertainty and surprise. It also provides a mix of components whose history and accumulated experience help cope with change, and facilitates redevelopment and innovation following disturbance and crisis”. In essence, more diversity leads to more variety and in an environment of constant change and uncertainty, one does not always know what will be needed in the future; therefore, having as many options as possible is the best strategy to be resilient in the long run. Diversity is also specifically mentioned in relation to types of

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15 It is important to note that, even though the literature on socio-ecological systems focuses primarily on changes in the ecological system, the ‘disturbance’ can come from changes in the physical environment or from changes within the social system (Jansen et al. 2007).
knowledge and as including, for example, indigenous knowledge in understanding a system (Folke et al. 2002, 2005). In addition, an increasing body of research focuses specifically on diversity in governance as a source for resilience (Burger et al. 2001, Ostrom et al. 2002, Berkes et al. 2003, Dietz et al. 2003, Folke et al. 2005, Ostrom 2005).

**Learning:** Many authors stress the need for flexibility and learning to deal with the complexity and constant changes (Gunderson 2001, Scheffer et al. 2001, Folke et al. 2002, 2004, Olsson et al. 2004, Walker et al. 2006, Nelson et al. 2007, Chapin et al. 2010). Learning in this sense means to be able to sense changes and respond to them effectively. The literature focuses specifically on social and institutional learning and includes social memory, the capacity to learn from experience, as a mechanism (McIntosh 2000, Folke et al. 2005). Scheffer et al. (2001) discuss how resilient systems must not become rigid and monolithic in any way, but instead constantly learn and adapt to the situation. Folke et al. (2002, 47) claim that “flexible social networks and organizations that proceed through learning-by- doing are better adapted for long-term survival than are rigid social systems (that have set prescriptions [....])”. The importance of the aspect of learning is also support by literature in the field of organizational learning (e.g., Senge 1990).

**Self-organization:** Complex adaptive systems are usually self-organized systems without system-level, intent or centralized control (Clark et al. 1995, Levin 1998, Westley 2002, Walker et al. 2006). Walker et al. (2004) explain that, although the system is “dominated by individual human actors who do exhibit intent, the system as a whole does not (as in the case of a market)”. It is this capacity for self-organization that is especially important when confronted with a sudden change in the environment (Olsson et al. 2004, Folke et al. 2005, Norberg and Cumming 2006, Folke 2006, Osbahr et al. 2010). Folke et al. (2002) emphasize the importance of creating opportunity for self-organization towards socio-ecological sustainability.

**Social Capital/Networks/Trust:** While the characteristics listed so far apply to all living systems, an additional one has been discussed for the social system, namely social capital and trust as necessities to coordinate the system in its adaptation and allow for collective action (Pretty and Ward 2001, Ostrom and Ahn 2003, Pretty 2003, Adger 2003, Folke et al. 2003, Olsson et al. 2004, Folke et al. 2005, Walker et al. 2006, Osbahr et al. 2010). Folke et al. (2005) specifically claim that social capital increases the flexibility of management organizations and institutions. This aspect will be discussed in more depth in the following section; however, it is worth mentioning already that the concept of social capital is a confusing and often-criticized one (e.g., Arrow 2000); therefore some caution and great analytical precision is required.
The Role of Trust in Social Systems

Many social scientists claim that trust is the fabric which binds society together (Hollis 1998, Luhmann 2000, Potter 2002, Caldwell and Clapham 2003). This speaks to the importance of the links and connections in the system and the quality of these. The argument goes as follows:

As a social species, human arrange themselves into various forms of organizations (or sub-systems), but to make the organization effective, they need to coordinate their interactions (Gordon 1991, 6). However, coordination becomes more challenging in a system as complex as the social one. In such a complex system it is almost impossible for one or a few individuals to understand or completely control the entire complex system. Therefore, with more and more complexity we must rely more and more on others to make decisions and choose viable alternatives (Meijboom et al. 2006, Meijboom 2008). A way to deal with the risk and uncertainty inherent in this complexity and the need of reliance is by trusting (Lahno 2001, Meijboom et al. 2006). Friedman (2007, 557-558), e.g., states “without trust, there is no open society, because there are not enough police to patrol every opening...without trust there can also be no flat world, because it is trust that allows us to take down walls, remove barriers, and eliminate friction at borders”.

Trust is therefore seen as a quality of connection, which allows the system to remain together despite the level of internal complexity. In return, as discussed above, it allows for coordinated, collective adaptation to the constant change produced by the complex adaptive systems around us (rather than many individual, competing adaptive strategies).\(^\text{16}\)

The importance of trust in social systems is supported from many social science fields. In organizational studies trust is viewed as essential because it facilitates exchanges among individuals and enhances cooperation and therefore in economic terms, lowers transaction costs (Coleman 1990, Putnam 1993, Fukuyama, 1995, 2002). The field of social capital research, while as already mentioned very broad and ambiguous, discusses trust as one of the main variables that creates value in social systems (Putnam 2000, Fukuyama 2002, Wollebaek and Selle 2008). Rothstein (2005) argues that trust is the main variable in social capital and that many others that are discussed are not valid.

\(^{16}\) Note, that a diversity of adaptation strategies is still needed. However, not at the expense of each other. In case of an unexpected disturbance like a disaster, where the many structures that might usually keep the system together, fall apart, a system that is not built on trust will surely fall apart and result in attempts of ‘survival of the fittest’.
3. Results

in the same way. He therefore defines social capital as a function of networks and trust, so as the quantity of connections x the quality of the connections.

Since, in this work, it is argued that a system is defined by its connections (if there is a connection, you are part of the system), it is the trust aspect that is of special interest.

Defining Trust

Meijboom (2008, 91) defines trust as an

“attitude towards (collective) humans that enables an agent to cope with situations of uncertainty and lack of control, by formulating a positive expectation towards another agent, based on the assessment of the trustworthiness of the trusted agent”. He adds (ibid, 28) that “trust includes a sincere belief about the trustworthiness of the trusted agent that is informed by the available evidence. However, trust is more than cognitive, more than a mental conviction based on the available evidence. It further includes an emotional component”.

For Lewis and Weigert (1985) trust is characterized by a “cognitive ‘leap’ beyond the expectations that reason and experience alone would warrant – they simply serve as the platform from which the leap is made” (971).17 Mayer et al. (1995) incorporate the emotional component by adding a vulnerability component defining trust as the willingness of a trustor to be vulnerable to the actions of a trustee based on the expectation that the trustee will perform a particular action. They argue that “making oneself vulnerable is taking risk.

17 For support on the emotional component also see Jones 1996; Lahno, 2001. It is important to emphasize that there are quite strong proponents of trust being a cognitive element only, with co-operation and risk-taking used as synonyms (Hardin 1996, 2002, 2006; also see Colquitt et al. 2007 for an overview). In response to this, Meijboom (2008, 8) writes: “Risk calculation and trusting are two complementary, yet different mechanisms to deal with uncertainty. A risk approach aims to clarify the uncertain aspects of the situation in which one has to rely on another agent. In this context the aim is to translate the problem of known uncertainty into one of risk. Consequently, one can make a personal assessment and does not need to trust another. The ultimate aim is to prevent that trust is necessary and, if this appears to be beyond reach, to enable the individual confronted with uncertainty to calculate whether it is worthwhile taking the risk given one’s own interests and preferences. A trust approach to uncertainty, on the other hand, starts where a risk focus ends. It focuses on those situations that remain uncertain even after the uncertain aspects have turned in to risk”.

27
Trust is not taking risk per se, but rather it is a willingness to take risk” (Mayer et al. 1995, 712). Thus, trust is here defined as an attitude that enables an agent to cope with situations of uncertainty and lack of control, by making themselves vulnerable based on positive expectations towards another agent, derived from the assessment of the trustworthiness of the trusted agent.

Bews and Martins (2002, 14) describe trust as a dynamic phenomenon that unfolds over two stages. The first stage depends on ‘pre-trust’ conditions; the second depends on the perception of trustworthiness of the person to be trusted. This second part continues throughout the length of the relationship, while the first is of shorter duration. Pre-trust conditions include contextual factors, perceived risk and the propensity to trust.

Trust Necessitates Trustworthiness

Many authors claim that the essential factor in creating trust is actually trustworthiness (Mayer et al. 1995, Hardin 1996, Meijboom et al. 2006; Meijboom 2008, Tullberg 2008,). Meijboom et al. (2006) discuss this in relation to consumer trust: 

“You cannot make others trust you. This, however, does not imply that [...] trust is an unmanageable problem. It shows that we had better approach the issue from the question of why a consumer would trust someone else. If we do so, we notice that trust raises the question whether the other person is worth being trusted. This emphasizes that lack of trust is a problem of the one who wants to be trusted rather than of the trustor” (432).

Mayer et al. (1995) identified three components as the main dimensions of trustworthiness:

**Ability/Competence:** Ability is the group of skills, competencies, and characteristics that enable a party to have influence within some specific domain.

**Motivation of Benevolence:** Benevolence is the extent to which a trustee is believed to want to do good to the trustor.

**Integrity:** Integrity is the consistency in the other party in adhering to espoused values and the acceptability of these values (Mayer and Norman 2004).

These three components have since been validated empirically (e.g., Schoorman et al. 1996, Engelbrecht and Cloete 2000, Bews and Martin 2002, Mayer and Gavin 2005, Colquitt et al. 2007,) and adopted in subsequent models (McKnight et al. 1998; also see Colquitt et al. 2007). Finally, they have
been found to be the most recurrent factors in trustworthiness studies (Roy and Shekhar 2010).

Creating Trust through Trustworthy Institutions

The above components of trustworthiness are discussed in connection to interpersonal trust. Rothstein (2005) as well as Wollebaek and Selle (2008) believe, that, at a societal level, institutional trust is by far the most important predictor of social (generalized) trust. Rothstein (2005) argues that because institutions design the rules and incentives, which govern behaviour at the individual level, it is the institutional design that is the leverage point for fostering trust or mistrust within a society. He argues that specifically (i) effective and (ii) impartial governmental institutions that implement public policy lead to trust-generation in citizens.

He describes the psychological mechanism as follows:

- If public officials in a society are known for being corrupt, citizens will believe that even people whom the law requires to act in the service of the public cannot be trusted. They will therefore conclude that most other people cannot be trusted either.

- Citizens will be able to see that most people in a society with corrupt officials must take part in corruption in order to obtain what they feel their rightful due. They will therefore conclude that most other people cannot be trusted.

- In order to act in such a society, citizens must, even though they may consider it morally wrong\textsuperscript{18}, also begin to take part in corruption. They will therefore conclude that since they cannot themselves be trusted, other people cannot generally be trusted either.

The reverse applies as well. Therefore, if public officials can be trusted, then it infers that most other people can also be trusted.

The description of trustworthy institutions as effective (meaning competent at achieving their goal) and impartial mirrors the aspects of competence and benevolence as indicators of trustworthiness at the individual level. While benevolence implies more of a participatory stance, it makes sense that at a larger level this translates to equal treatment in form of impartiality. This is also supported by research around equality and trust. Wilkinson and Pickett (2009) show that trust is higher in more equal societies\textsuperscript{19} (and that many ills such as

\textsuperscript{18} Rothstein claims that they in fact also dislike taking part in it.

\textsuperscript{19} Measured by income equality
bad health, obesity, teenage pregnancy, violence, etc., correlate with lower equality levels. Finally, the integrity aspect (consistency of a party in adhering to espoused and accepted values) might be understood as being covered by the institutionalization of the other two concepts.

This concludes the investigation of the essential aspects of the social system. The next section attempts to translate these findings into success principles.

### 3.2.3. From System to Success Principles

The research began with the aim to develop a set of principles that meet the criteria necessary for backcasting (Robèrt 2000; Ny, 2006), namely, that they are:

- Science-based, that is, compliant with relevant scientific knowledge available to date.
- Necessary for sustainability, that is, to avoid imposing unnecessary requirements and to avoid confusion over elements that may be debatable.
- Sufficient for sustainability, that is, the SPs taken together should cover all relevant aspects.
- General, that is, people from various societal sectors and scientific disciplines should be able to understand and use them.
- Concrete, that is, capable of guiding actions and problem solving.
- Distinct, that is, mutually exclusive to facilitate comprehension and monitoring.

Below, an elaborate set of principles that attempt to meet these criteria is put forward based on insights from the research presented above.

The research so far has laid out that

- Individual humans aim to satisfy their needs and need others for that, but inherently have the capacity to organize this by themselves.
- Humans are meaning-seeking and -making creatures and therefore need meaning and purpose. Purpose functions as a mechanism through which humans connect to the larger system.
- Diversity, learning and self-organization are inherent aspects of all living systems. They therefore do not need to be engineered, but left room for to unfold.
- Trust is an essential element for the human complex adaptive system to function.
Based on the above, basic conditions for a sustainable social system are thus not that every individual’s needs are provided for, or a ‘utopia’ perhaps, but that the social system is designed such that it can optimize the possibility for its individuals to get their individual needs satisfied. How can social systems be designed such that its members will trust each other as much as possible and be as resilient as possible in the face of any forthcoming challenges, including un-sustainability related impacts? This leads to the principle that for social sustainability in a system people are not subject to systematic barriers to

1. ... integrity

This is about not doing direct harm at the individual level; physically, mentally or emotionally.\(^{20}\) In an organizational context it might refer to working conditions.

This principle is closely connected to human rights. This connection will have to be further investigated. In relation to human rights as found in the International Declaration of Human Rights (United Nations, ND), one can already determine now that some of the rights are closely linked to this, e.g., article 3 (right to life, liberty and security of person), article 4 (No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms) or article 5 (No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment). Others, however, such as article 17 (the right to own property alone as well as in association with others), seem not quite so relevant in this context. So there seems to be a connection, but not a complete overlap.

In addition, however, we need to assure that diversity is allowed to be expressed in the system. To ensure that diversity manifests itself in the system, each individual also needs to be given influence in the system. Influence in the system will also allow the individuals to self-organize and contribute their knowledge and learning, which will allow the system as a whole to self-organize and learn. This leads to the principle that for social sustainability in a system, people are not subject to systematic barriers to

2. ... influence

\(^{20}\) Integrity is here intended in the meaning of ‘Unversehrtheit’ in German. The adjective ‘unversehrt’ means without damage, injury or harm. Note that this is different than the meaning of the term integrity as used in the trustworthiness literature.
This is about being able to participate in shaping social system(s) one is part of and dependent on. At a minimum, this might mean being able to vote on leadership and issues and being able to make one’s voice heard.

The sustainability of a social system relies on another aspect, namely that individuals of a system are also allowed to develop and grow as regards their competences, and the same is true for the organization at large. This aspect was featured in the trust discussion as well as under the importance of learning at a systems level. This leads to the principle that for social sustainability in a system people are not subject to systematic barriers to

3. ... competence

This is about safeguarding that every individual (and group) has the opportunity to be good at something and develop to become even better. It includes the securing of sufficient resources for education and other sources for continuous personal and professional development. This also includes the ability to learn in order to remain adaptable and therefore resilient. Further it includes organizations being good at what they aim to deliver.

The competence aspect seems to be a quite strongly supported aspect as it comes up in both the interpersonal and the institutional trust research as well as in complex adaptive systems research in the form of learning. However, how competence is judged might be an interesting point. What does it really mean? There might also here be an interesting connection to the ‘meaning principle’ (see below) as competence, for an organization for example, is probably in relation to purpose, e.g., an organization is being judged as competent or not competent in relation to what they said they would deliver (purpose).

The research on trust outlined before, has emphasized the importance of impartiality and equality. This leads to the principle that for social sustainability in a system people are not subject to systematic barriers to

4. ... impartiality

Principle 4 refers to the idea that people should treat each other equally, both between individuals, and between individuals and organizations such as in courts, authorities, etc. It is about acknowledging that all people have the same rights and are of equal worth.
Finally, the importance of meaning and purpose has already been discussed. As mentioned, common meaning and purpose creates trust and also acts as a motivator for self-organization and learning. This leads to the principle that for social sustainability in a system people and groups are not subject to systematic barriers to

5. ...meaning

The idea of meaning speaks to the reason for being an organization or system. How does it inspire its members, what does it aim to do and why?

The meaning and purpose aspect is quite strongly supported in the psychology literature and organizational studies literature, respectively. It is also this aspect specifically that the major insight for systems thinking that the FSSD is based on, namely that system boundaries can be derived based on purpose, is built on. This also leads to the question whether meaning is something that needs to be actively achieved rather than not undermined, a point returned to in the discussion.

The importance of meaning is not the least evident when looking at sub-systems. In a complex system with independent agents, these agents have many choices regarding what sub-system to affiliate with. A reason for existence may be serving a particular function, serving a function particularly well or having some other attribute that attracts people. What motivates people to be part of a specific sub-system? As Vallance et al. 2011 (345) for example, point out in relation to cities “a sustainable city is one that people actually want to live in”. If they can see no reason to live there, they might move somewhere else. This echoes the argument for a meaning and a strong purpose in organizations in order to ensure their survival (e.g., Collins and Porras 2002).

This concludes the investigation of the social system (for now). The five postulates derived above together can be formulated into a first hypothesis of principles for social sustainability that together with the ecological sustainability principles assure socio-ecological sustainability. The eight principles of the FSSD, then, are as follows:

In a sustainable society,
nature is not subject to systematically increasing...
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1. ...concentrations of substances extracted from the Earth’s crust,
2. ...concentrations of substances produced by society,
3. ...degradation by physical means

and...

people are not subject to systematic barriers to

4. ... personal integrity
5. ... influence
6. ... competence
7. ... impartiality
8. ... meaning

Further work on specific wording may be required, but the above presents a first set of results. The following section focuses on validating the results through supporting approaches.

3.2.4. Cross-checking with Other Approaches (Validity)

In this section, the approach presented above is cross-checked with other approaches found in the literature. The approaches presented here are the result of a literature study on systematic approaches to the social system. They were selected because of their thoroughness and/or the prevalence in their respective fields. The list is by no means exhaustive and others might be added in the future.

Bossel’s Orientor Approach

Bossel (1999) has created what he calls the basic orientor approach, in which he examines the fundamental properties of systems and the mechanisms which are needed for its viability (basic orientors). He argues that different kinds of relationships have to be considered for a system approach to sustainability – the relation of the system to its environment, to other systems and to the sub-systems. He claims that these orientors are necessary for all living systems to sustain themselves and asserts that based on evidence from much research that the set of basic orientors is complete (covering all essential aspects), and that each basic orientor is unique (cannot be replaced by others). Bossel further claims that the orientors match Luhman’s theory of social systems, general
ecosystem properties (he quotes Müller and Fath 1998) as well as Cultural Theory (e.g., Thompson et al. 1990).

In the orientor theory there are six *environmentally* determined orientors:

**EXISTENCE:** The system must be compatible with and able to exist in the *normal environmental state*. The information, energy and material inputs necessary to sustain the system must be available.

**EFFECTIVENESS:** The system should on balance (over the long term) be effective (not necessarily efficient) in its efforts to secure *(scarce)* resources (information, matter, energy) and to exert influence on its environment.

**FREEDOM OF ACTION:** The system must have the ability to cope in various ways with the challenges posed by environmental *variety*.

**SECURITY:** The system must be able to protect itself from the detrimental effects of *environmental variability*, i.e., variable, fluctuating and unpredictable conditions outside the normal environmental state.

**ADAPTABILITY:** The system should be able to learn, adapt and self-organize to generate more appropriate responses to challenges posed by *environmental change*.

**COEXISTENCE:** The system must be able to modify its behaviour to account for behaviour and interests (orientors) of *other (actor) systems* in its environment.

He also designates a system-determined orientor:

**REPRODUCTION:** Self-reproducing (autopoietic) systems must be able to reproduce (either as individuals and/or as populations).

Bossel (1998, 38) argues that, “As the level of system complexity increases, new basic system needs appear” and therefore introduces another orientor for sentient beings.

**PSYCHOLOGICAL NEEDS:** Sentient beings have psychological needs that must be satisfied.

Finally, conscious beings have one more orientor: Conscious beings (mainly humans) can reflect about their own actions and their impacts, and make conscious choices that necessitate RESPONSIBILITY as an orientation (Chittenden 2000 based on Bossel).

However, the REPRODUCTION aspect is often subsumed under the EXISTENCE orientor, while the RESPONSIBILITY orientor is reflected in the selection of the horizon of responsibility, i.e., in the selection of present and future systems for
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whose development responsibility is assumed. This leaves the seven basic orientors: EXISTENCE, EFFECTIVENESS, FREEDOM OF ACTION, SECURITY, ADAPTABILITY, COEXISTENCE, and PSYCHOLOGICAL NEEDS.

Bossel (1999) also compared his orientors to Manfred Max-Neef's Human Needs (1991) and has determined that they are equivalent, which he deems not surprising as they apply to any self-organizing system including humans and “since they manifest in corresponding emotions ... they can be interpreted as ‘psychological needs’ (as does Max-Neef), although their origin is of a general system nature” (Bossel 1998, 83). Chittenden (2000) has examined this comparison and mostly concurs with the assessment, barring a few nuances.

In the following, the orientors will be connected to the principles put forward in this research.

Bossel explains existence as the ability to exist in the normal environmental state (see above). For the social system at large this therefore relates more to SPs 1-3. For a smaller social system, the environment could be another social system. However, then it seems to overlap with co-existence, which will be discussed below.

Effectiveness is about the ability of the system to use its resources to create habitable environments (level 1 of the FSSD). This is assured when healthy people (INTEGRITY) work together (INFLUENCE and MEANING) and are good at what they do (COMPETENCE).

Freedom of Action is about the ability of the system to choose the best option for its aim. This is assured when healthy people (INTEGRITY) have a common aim (MEANING), when everyone can contribute (INFLUENCE) equally (IMPARTIALITY), so that best learning is possible.

Security is about the ability of the system to protect itself from and deal with extreme, unexpected changes, while adaptability is about the ability to respond to gradual change of the environment. This is assured when healthy people (INTEGRITY), can all (IMPARTIALITY) bring their ideas (INFLUENCE) and can learn together (COMPETENCE).

Coexistence is about the ability to live side by side with other actors in the system. This is assured when people feel that their INTEGRITY is respected, they are seen as equals (IMPARTIALITY), and when their voice is heard (INFLUENCE).

Many of Bossel’s orientors describe how the system works and therefore fall at the systems level of the FSSD. This is to be distinguished from mechanisms by which that way of functioning can be destroyed (level 2 of the FSSD). Despite this analytical distinction, the fact that Bossel’s orientor matches closely what
this research has discovered strengthens the approach this research has taken overall.

Interestingly, Bossel makes similar claims about his orientor approach as the FSSD requires from its principles: Bossel claims that the orientors are necessary for all living systems to sustain themselves and asserts that, based on evidence from much research, the set of basic orientors is complete (covering all essential aspects), and that each basic orientor is unique (cannot be replaced by others). This mirrors the characteristics set forth for principles by Robèrt 2000 and Ny, 2006), namely that principles should be science-based, necessary, sufficient, general, concrete and distinct.

*Parson’s AGIL Scheme*

In sociology, Parson’s AGIL scheme has, it seems, been severely criticized and long abandoned. Some, e.g., Sharrok et al. 2003 though, argue that the interpretation of especially Parsons’ work is heavily skewed and that in fact his theory is not as conservative as some make it sound. Despite all of this the similarity with the findings presented here as important aspects of the social system, sticks out and is worth mentioning. Parsons’ AGIL scheme refers to the four basic processes that are essential for social systems, namely adaptation (A), goal attainment (G), integration (I) and what he calls latency (L), which stands for pattern maintenance, maintaining value commitment and tension management. While adaptation quite obviously relates to the resilience aspects discussed earlier, goal attainment can be easily connected to competence as well as the aspect of meaning discussed for the subsystem earlier in this section. Integration and latency both speak to the need of the system to stay internally connected. The aspect of trust speaks to this same need.

*Fundamental Interpersonal Relations Orientation*

The Fundamental Interpersonal Relations Orientation (FIRO) is a theory introduced by William Schutz in 1958, which explores these aspects of interpersonal relationship. Schutz theory is the most widely cited and has a long track-record of being practically used in high-performance teams, e.g., squad teams in the army and alike. According to the theory (Schutz 1958, 1992, 1994), three dimensions of reciprocal interpersonal relations are necessary and sufficient to explain well-functioning teams based on trust:

1. Being Significant … opposed to feeling unimportant, meaningless, and of no value.
2. Being Competent... opposed to feeling inept and unable to cope.
3. Being Liked…opposed to feeling unappreciated.

Moving from smaller groups - the objective of Schutz studies - to the larger societal context - the objective of this work - some of the FIRO language might need to be adjusted. An individual cannot expect to be ‘significant’, ‘competent’ and ‘liked’ in person by people not known even at a distance. Still, we can respect a general feeling of likeability for other people, and the concrete expression of that would be to respect the integrity of each individual on Earth. Being ‘significant’ is also a doubtful expression in the larger social context; you cannot say about people you don’t know that they are significant. But you can claim their right in this context. The best translation to the larger social system might then be ‘influential’, which is a more generic term regardless of scale of the social system. The term competence seems to be applicable to both the smaller and the larger system and therefore does not need to be changed. Despite FIRO’s focus on the level of interpersonal groups and the different nuances that comes with that, it seems interesting that similar terms and concepts show up in FIRO’s research as appear in the research conducted here. Finally a notion with regard to the fourth and fifth principles proposed here, ‘meaning’ and ‘impartiality’: Schutz was studying quite intimate groups e.g. in the US marine where those principles may have been taken for granted. They cannot be taken for granted when we study society at large.
The results section can thus be summarized by the following two diagrams:

| System          | Individual humans and their connectedness into relationships  
|                 | Cultural, legal, economic and other sub-systems and the corresponding institutions that we use to facilitate our relationships |
| Succes          | In a sustainable society, People are not subject to systematic barriers to |
|                 | 4. ... personal integrity  
|                 | 5. ... influence  
| Strategic        | 6. ... competence  
|                 | 7. ... impartiality  
|                 | 8. ... meaning  
| Action           | UNEXPLORERD TO DATE – SEE DISCUSSION AND FURTHER RESEARCH  
| Tools            | UNEXPLORERD TO DATE – SEE DISCUSSION AND FURTHER RESEARCH  

*Figure 3: Research Results displayed in 5 levels*
Figure 4: The ecological and social side of the Framework for Strategic Sustainable Development – now updated and more complete (compared to figure 2)
4. Discussion

This section features a discussion of the general approach used, reflection on the results in relation to the aim set out, including reflections on validity, as well as a discussion of implications for the strategic level of the FSSD and the social sustainability field in general.

4.1. Reflection on Approach

4.1.1. Reflections on a Trans-disciplinary Approach

A comprehensive understanding of the social system clearly validates a trans-disciplinary approach because (social) life does not occur in disciplines. The most comprehensive understanding therefore comes from combining different approaches and seeing multiple perspectives at the same time. However, trying to take in multiple perspectives also brings very practical challenges; the most basic one being, that one person cannot read everything and understand every thought there has ever been about the social system and sustainability. This research covered a lot of breadth: the field of social sustainability as it is currently being discussed in the literature; the history and philosophy of social sciences; complex adaptive systems and social complexity; social capital and trust; human needs and more. And yet, not everything has been covered. In addition, breadth takes away a little bit from depth when there is a given time-frame. This is acknowledged as a challenge and a limitation to this research at this point. While support from various fields also strengthens the research and adds to its validity, more work will need to go into understanding the subtleties of some of the approaches.

The FSSD approach proposes to address this by exploring two levels in parallel: the system on the one hand, and a drive to derive robust principles or boundary conditions for objectives in the system on the other. The approach works as follows: one attempts a definition of objectives (in the form of principles) in a complex system, then goes back to see if the definition serves the criteria ‘necessary, sufficient, concrete, general and distinct’ for the outlined objective. This leads to criticism as regards the relevance and robustness of the principles and some refinement. The new version is then again tested in practice and in relation to the systems level. This is because one does not need to understand everything in the system to move systematically towards a clear objective in the system, but one must understand the system enough (Ny et al. 2006). Further development along these lines will be necessary.
4.1.1. Reflections on Definitions

In this research, the social system has been defined as individuals connected into a system through human relationships and interactions. While this is a rather broad definition, the research necessitated a definition that could capture all social sub-systems and not be too specific so as to exclude some. The chosen definition has served this purpose well. The limitation is, of course, that the principles may be understood as rather abstract and, therefore, potentially hard for people to identify with and reflect on. This will require more concrete work and action research later on. However, a preliminary assessment of the principles amongst actors in business and municipalities have shown that the principles seem understandable, and lead to very concrete questions for further exploration and modeling.

An important note is that ‘social system’ was purposefully chosen over the term ‘society’. As Giddens (1984, 10) states “it is essential to avoid the assumption that what a ‘society’ is can be easily defined, a notion which comes from an era dominated by nation-states with clear-cut boundaries that usually conform in a very close way to the administrative purview of centralized governments”. The word society conjures up associations with nation-states and potentially specific details of what this society might look like. The more abstract term of ‘social system’ avoids these associations and therefore hopefully steers clear of controversies over the details of the social system.

Social Sustainability in a general sense has been defined as not undermining the capacity of the social system to provide human life and well-being. It is a boundary condition within which the system continues to function, outside of which it does not. To reiterate, it is not about utopia, i.e., conditions for the flourishing of human life, but about the basic conditions that are necessary for the social system to not systematically degrade into dysfunction, e.g., general segregation and corruption.

This connects to the overall distinction within the FSSD between backcasting from principles vs. backcasting from scenarios, the advantage of backcasting from principles being that it is easier for a large group to agree on because it is about basics rather than more detailed goals (which, depending on values and individual preferences, can be designed in many different ways to satisfy the principles). This certainly seems appealing when trying to define social sustainability for the entire global system. In addition, the self-organizing properties of living system allow the system to develop on its own as long as it does not undermine that development. It therefore makes sense to phrase the principles as boundary conditions and equip them with a ‘not’.
4. Discussion

4.1.2. Reflections on a Systems Approach

A systems approach to (social) sustainability seems appropriate, based on the mere fact that the social system is indeed a system. In addition, the aim of understanding the system is to plan for its sustainability. In this context, Hjortha and Bhageria (2006) support a systems approach. They claim (2006, 79) that “to do a good planning it is essential to find a way to formulate reality as a system rather than as a set of independent problems. A system is recognized by the integrity and interaction of its components. To improve a system it is no use improving each part separately, rather the whole [and the relationships] should be looked at”.

However, one should also be cautious as systems thinking is riddled with analogies and metaphors of natural systems, where the field originated, but these analogies and metaphors may potentially not be applicable the same way to social systems (Jackson 2001). This has already been touched upon in footnote 11.

For many, systems thinking in the social sciences is connected to the strand of functionalist thinking in sociology (Hanneman 1988, 29; Jackson 1985). This then, in turn, is connected to the maintenance of order and more conservative political strands. Hanneman (1988, 29) states, that “indeed there is a strong historical connection between the use of systems language and preferences in theoretical activity in most of the social sciences. But the connection is not a necessary one. Systems thinking is equally consistent with the analysis of contradiction, disorder and change as it is with the analysis of harmony, order and stability.”

4.2. Reflection on Results and FSSD Logic

The research set out to derive a zero hypothesis of useful social sustainability principles, which reflect the boundary conditions of a functional social system. The end result was a first hypothesis of five social sustainability principles related to an individual’s integrity and influence as well as an organization’s competence, integrity and purpose. This section focuses on discussion and insights as regards the original aim and the FSSD approach.

4.2.1. Characteristics of the Principles

The aim of the research was to identify social sustainability principles, which can be used as principles for re-design and have the following characteristics (Robèrt 2000; Ny 2006):
Missimer, M
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- Science-based, that is, compliant with relevant scientific knowledge available to date.
- Necessary for sustainability, that is, to avoid imposing unnecessary requirements and to avoid confusion over elements that may be debatable.
- Sufficient for sustainability, that is, the SPs taken together should cover all relevant aspects.
- General, that is, people from various societal sectors and scientific disciplines should be able to understand and use them.
- Concrete, that is, capable of guiding actions and problem solving.
- Distinct, that is, mutually exclusive to facilitate comprehension and monitoring.

The social sustainability principles that have emerged from this research do follow these characteristics. The research has built a logical argument for why these principles are necessary. They are also intended to be sufficient. However, the FSSD has always and will always be subject to continuous development. So other additional principles might be added over time and/or the principles of the zero hypothesis may need adjustments. They are intended to be general in that they are applicable to any organization and yet concrete enough to guide action. They are also largely distinct in that aspects of one are not covered by another. However, even if there would be subtle overlaps this may be a smaller problem than (i) non-sufficiency, i.e., missing essential aspects and therefore principles and (ii) analytical confusion as to whether concepts belong at which level of the strategic planning framework. This will be returned to in future work.

4.2.2. The Principles Themselves

Having derived the five principles, the final question is how do they work together, how do they integrate into a whole that guarantee the functioning of the social system. Some of this has already been highlighted in the results section; some of it might only become obvious in further stages of the research, namely the action research phase when the principles will be used actively in sustainability work with companies. However, there are some comments that can be made on the integration on a theoretical level already now.

The research on trust has shown that effective and impartial institutions are the key to fostering trust in a social system. This lead to principles for ‘competence’ and ‘impartiality’. The term equality has also been used in a similar context for the latter (e.g., Wilkinson and Pickett 2009) Their role is so important because these institutions are responsible for the governance of the entire system and they are key in creating social norms around interaction. Rothstein and Stolle
(2008, 444) explain that “states, for example, enable the establishment of reliable contracts between citizens in that they provide information and monitor legislation about contracts, and enforce rights and rules that sanction lawbreakers, protect minorities and actively support the integration and participation of citizens”. And further (445/446):

“Institutions of law and order have one particularly important task, to detect and punish people who break contracts and who therefore should not be trusted. Thus, if citizens think that these order institutions do what they are supposed to do in a fair, reasonably efficient, and unbiased manner, then they also have reason to believe that the chance people will get away with treacherous behavior is relatively small. If so, citizens believe that most people have good reason to refrain from acting in a treacherous manner and thus conclude that most people can be trusted.”

So the question is why the research around institutional trust came up with only these two principles, not all five, despite aiming for a similar outcome. One reason may be that the ‘integrity’ and ‘meaning’ principle are taken for granted in this context. In a hospital (as an example of a public institution), the whole meaning is to help people overcome threats to their integrity. Thus both of these might be so integral to the core that they might be taken for granted. Similarly the ‘influence’ principle might be more indirect through the legislature and people voting on how hospitals should be run, as well as a guiding principles within the staff who strive to become competent not only as individuals, but together as teams.

Similar comments have already been made in Section 3.2.4 about the FIRO principles. These principles were also intended to address trust, but for a smaller group. Therefore, the principles of ‘meaning’ and ‘impartiality’ might have been taken for granted, which is not suitable at the larger level.

4.2.3. Basic Requirements and Boundary Conditions

A challenge arises with the approach of basic requirements for sustainability on the social side. While ecological systems are the result of evolutionary processes, the social system is more than just that. A part of the social system has roots in evolutionary social biology, but it is also a highly developed human construct. While avoiding basic mechanisms for destruction may seem possible to defend as a starting point for planning on the ecological side (humans have never been obliged to engineer natural systems to make them sustainable), the same is not necessarily true with social sustainability. For the social system, an
ethical stance of avoiding obvious mechanisms behind erosion of the social fabric may not be enough. Are perhaps deliberate and constructive positive actions in social systems also needed? It is clear that as humans we want to contribute to something positive and meaningful rather than not to harm. However, the question here is not what are humans pulled towards, but whether more than avoiding basic mechanisms for destruction is needed for social sustainability?

Questions come up especially in relation to learning. Even though learning is a natural individual trait, the organizational learning literature comes to the conclusion that organizational or communal learning does not come naturally to us. Yet, it is clear that to learn as a system we need to learn together. Lageroos (2004, 321) in this same vain comments, that

“learning can be stifled and the traditional patterns of an advanced social system often do just that. As systems age, they tended to solidify protocols that once worked, but may no longer work because the environment has changed or because the protocol has become corrupted over time without anyone noticing. Yet, the people who achieved power by the old system naturally tend to believe in it. Hunting societies, for example, tend to name the best hunter as leader. However, as the group grows bigger and more skillful in hunting, the available prey declines. Leaders who are the best hunters naturally seek bigger and better ways to hunt— which leads to even less prey. Anyone who suggests settling down to grow food (agriculture) is considered crazy because everyone knows that the way to get food is to hunt”.

Similar ideas come up in relation to diversity. In his book, Rothstein (2005), based on Yamaggishsi’s idea of the relationship between social intelligence and trust, argues that, in order to create trust and social capital, conditions need to be created and people need to be actively encouraged to interact with people who are different from them early on in life. Is it a given that if there is diversity, people will also interact? Is it enough to allow for diversity or does the interaction need to be actively encouraged?

Some aspects of the above two points around learning and diversity might be addressed by meaning and a common purpose. Is that enough? The idea that a system needs a purpose and that individuals need meaning, as already mentioned, leaves us with a similar question about positive contributions. Purpose and meaning is something you have or do not have. Does this imply that we need to re-think the negative phraseology? Does Giddens’ theory of
structuration imply the same thing, namely that we need to contribute actively to a furthering of the aspects covered by the SPs?

On the other hand, with active contribution one can easily fall victim to aiming for details and scenarios that are not necessarily shared with everyone in the system, and one loses the aspect of creativity within constraints.

These are musings that will need to be addressed in the further research, perhaps from experiences in the action research work. For now the focus has been on identifying destructive elements, which should be helpful also for the social system.

4.2.4. Systematic

It is important to note that the word systematic is used in two different ways here. In the first three SPs, the term refers to an increasing deviation from the ‘natural’ (pre-industrial) state of the socio-ecological system due to society’s actions (Robèrt et al. 2010). According to the Oxford English Dictionary the word ‘systematically’ means: in a systematic manner; according to a system or organized plan; regularly or methodically. So ‘systematically’ can also mean that the society must not be organized in such a way that it makes itself systematically dependent on activities that cause such effects (Holmberg and Robèrt 2000). This second meaning implies that something is attributed to the very design of the system. When it comes to social sustainability, this second meaning is probably much more useful. To have something counteracting the five social sustainability principles by design is something that would probably derange the social system until the social trap is a fact, even if this would not lead to more and more and more, or less and less and less of anything.

4.3. Validity

The validity of the results is supported by the trans-disciplinary research approach and the many theories and findings in different fields that point to similar results. A theory is usually tested empirically for validation. The plan for the continuation of the research is to test the theory/principles in real-world settings with companies and municipalities.

Testing for validation is, however, harder for more abstract higher-level social theories and in dynamic systems. Blessing and Chakrabarti (2009) discuss the limitations of validating design research as it is often difficult to establish whether the desired effect was created by the specific intervention or another un-accounted for aspect. In addition, “the context in which the development process takes place changes, irrespective of the introduction of design support:
people learn, markets change, organisations evolve, new technologies emerge, new knowledge becomes available and new regulations are put in place” (ibid, 183).

In that sense, we will validate whether the proposed principles are applicable understandable, relevant and helpful to people working in the field and help them to identify gaps to improve on the robustness of the social fabrics of which they are part.

The limitations in determining validity act as an encouragement to be as objective, accurate, clean and transparent as possible, so that others may find holes in the logic and update the theory. As Gordon (1991, 110) states, “A good model can be expanded to include additional factors when their relevance is suspected.” This research aims for a good model.

4.4. **Connections to the Larger (Social) Sustainability Field**

Earlier in the research an overview of the current social sustainability field was presented. This section connects back to these earlier findings.

4.4.1. **Comparison of Findings**

When first looking at the final results presented in Section 3.1 of the overall field and Section 3.1, where a systematic approach to understanding the system, was used, it sticks out that there is an overlap of many of the themes. Barron and Gauntlett (2002) speak of equity, diversity, connectedness, democracy and a good quality of life; Littig and Griesser (2005) mention human needs, social justice, human dignity and participation; Partridge (in Spangenberg and Omann 2006) lists equity, inclusiveness, democracy and quality of life. These are similar to the themes of integrity of the individual, influence of the individual of the system and impartiality. However, in the review of the general field, none of the results were based what seemed like a systematic understanding of the social system nor are they necessarily designed nor suited for backcasting as they substantially overlap. In addition, terms such as democracy are hard to work with, because they simultaneously mean so many things and nothing, if not strictly defined. Some might reject the term for what it means politically; at the same time it is unclear which aspect of the concept (Free elections? Representation?) is the important aspect. However, it also adds support that many different approaches arrive at similar conclusions. So what did the research conducted in this project add? For one, a thorough base for why these aspects are important based on a scientific understanding of the important dynamics of the social system. Second, a
definition of social sustainability that is suitable for strategic planning based on a backcasting from principles approach, the significance of which has been discussed.

4.4.2. Perspectives and Mental models

One issue, that was repeatedly emphasized in the complex adaptive management literature, was that any attempt of managing a complex system needs to be based on accepting uncertainty and constant change (Carpenter and Gunderson 2001, Kinzig et al., 2003). Planning and predicting as we are currently used to in management is, therefore, not always possible or suitable (Berkes and Folke 1998), which is also why traditional command and control management approaches are unsuitable for the interaction with these kinds of complex systems (Gunderson et al. 1995, Scheffer et al. 2002). This points to the fact that some of the challenges of (social) sustainability are not about sustainable or unsustainable action, but rather about the understanding humans have of the system and how we believe it to operate. If we do not accept uncertainty and change (and various other aspects) as a given of the social system, then our approaches to social sustainability might look very different.

The approach of backcasting from principles employed here is therefore specifically designed to make working with uncertainty easier, that is, to allow for systematic, but open-ended working.

The level of application or perspective was also an interesting theme that emerged. Several authors warned of the idea that adaptedness to a specific location or phenomenon might actually lead to an overall decrease in resilience. If a system becomes too used to a specific kind of change, it might specialize in this adaptation and therefore become more vulnerable to other, unforeseen changes, and it might be tempted to become more efficient in responding to the changes and settle on one strategy, thereby undermining its diversity in responses (Walker et al. 2006).
5. Contributions

This research aims at further developing the social dimension of the FSSD. The work to this point contributes mostly with regards to theoretical understanding, which is a first step to making practical moves to strategically move towards sustainability.

5.1. To the Research Field

The field has been demanding a clearer definition of social sustainability for a long time. Practitioners in the field using the FSSD have requested the same. This research contributes such a definition of social sustainability, which is general enough to be applied irrespective of spatial and temporal constraints, but concrete enough to guide decision-making.

5.2. To Society

The demand of a clearer definition in the research field is not just for the purpose of analytical clarity, but because without a clear theoretical concept, it is hard to practically work towards social sustainability. As sustainability is an applied science, all answers are intended to have immediate practical consequences. Sustainability is studied not just to understand it, but to make the world more sustainable. In that way, an answer to the question of how one can work more strategically with the social issues of sustainability is meant to help us create a more socially sustainable world. The need for this and the lack of it was demonstrated in this research.

Quite practically, a strong desire for a more elaborated, operational and robust definition of social sustainability has also been expressed by project partners and many other organizations as a prerequisite for them to be able to work more concretely and systematically with social sustainability aspects. This research provides an attempt at such a definition.
6. Future Work

As mentioned, the work presented here is part of a larger PhD project with the aim to further develop the social dimension of the FSSD.

The aim of the next step in this work is to elaborate the candidate set of principles further, i.e., test/adjust/supplement/refine them (iteratively) and, finally, show their usefulness in relation to some specific cases, all through a close cooperation with partners in academia, business and municipalities.

Further, it will be investigated whether such a more elaborated and refined definition of social sustainability can be integrated with existing support methods and tools for product innovation. If it can, work will focus on how to do so; if not and new methods and tools are required, the work will outline how to adjust and/or develop such support methods and tools.

Many of the questions raised in the discussion will need to be addressed. Specifically, the strategic level of the FSSD has not been explored in this research to date. The current strategic level consists of guidelines in relation to backcasting and prioritization. As planning is a social process, there are also social guidelines that have been proposed (Robèrt et al. 2002, Robèrt et al. 2010). The main current guideline is that of the Golden Rule, which builds directly on empathy, people’s inborn capacity to understand other people and put themselves in their shoes. It lies at the foundation of all ethical principles, and is present in the world’s religions. In the Jewish and Buddhist traditions, the Golden Rule is described: “You should not do to others what you do not wish them to do to you.” Other guidelines relate to organizational processes:

- **Participation.** Is this decision based on enough participation and dialogue with all affected parties? (Would this degree of participation, if I were subjected to it, be acceptable to me?)

- **Transparency.** Is this decision planned in a way that has enabled people to gain access to information and monitor the process throughout? (Would this degree of transparency be acceptable to me?)

- **Responsibility and accountability.** Has the responsibility for the decision been clearly communicated between all the people taking part in the planning process, including those who are affected indirectly by the result? (Would this degree of clarity in terms of responsibility and accountability be acceptable to each and every one of us?)

- **Honesty.** Would the people involved be ashamed or would they maintain their dignity if all people suddenly gained access to their innermost thoughts and thus discovered exactly what was driving their
decisions? (How would they react if they were subjected to a measure prompted by the same combination of public and private factors?)

At a first glance all the above characteristics still seem to be appropriate in connection to the new social sustainability principles. A further investigation of the relationship will be carried out in the continuation of this PhD project.

This will be done through mental modeling along the five levels of the FSSD based on continuous literature studies, e.g., the concept of empathy at the systems level, leads to the golden rule at the strategic level, to assure, for example, impartiality at the success level. This kind of modeling will be continuously applied to all further concepts found in the literature.

The detailed research questions for this next phase are as follows:

- Does the candidate set of principles provide a more robust definition of social sustainability within the FSSD?
- What does using the candidate set as guidance for strategic sustainable development in an organization reveal about their usability for strategic planning?
- What implications does the new candidate set of principles have for the strategic guidelines level of the FSSD?
- How does the candidate set of social sustainability principles relate to other social (sustainability) or Corporate Social Responsibility protocols?
- Is it possible to integrate social sustainability criteria in existing methods and tools for sustainable product innovation and if so, how?
- Does planning for social sustainability in sustainable product innovation require additional methods and tools and if so, how could these be developed?

A project plan for this phase has already been designed and approved for support by a funder, which will allow for a seamless continuation of this research project.
7. Conclusion

This research began with the idea that the social dimension of sustainability specifically in regards to the FSSD could benefit from further support and elaboration. The research aims to answer the following research question:

*How can the FSSD be further developed as regards the social dimension to better aid more concrete planning and decision-making for sustainable innovation?*

In a first step, the current development of the FSSD and the general sustainability field were examined and the conclusion was that a further elaboration of the social dimension is indeed desired and needed. The research then went on to derive a first attempt at a clearer and more robust definition of social sustainability; five candidate principles were proposed. While some answers were found, many more questions were raised (mainly discussed in Chapter 4).

One conclusion that can be made based on the experience with this research so far is that working with the social aspects is difficult and complex. However, study so far demonstrates that it possible to approach a cohesive and well-structured analysis of the social system in such a way that it adds to a framework designed for analysis of, and planning in, complex systems. The social side might not mirror the ecological dimension directly, but it does provide an overview and guidance in a similar way. This may be necessary to allow for more effective and efficient cross-sector and interdisciplinary cooperation. It would also be helpful for more effective and efficient use of existing methods, tools and concepts for social sustainability, since it would help determine their relationships to sustainability, as well as to each other.
8. References


Missimer, M
*The Social Dimension of Strategic Sustainable Development*


Missimer, M
The Social Dimension of Strategic Sustainable Development


8. References


8. References


References


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<tr>
<th>Missimer, M</th>
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<tbody>
<tr>
<td><strong>Social</strong></td>
<td><strong>Colantonio 2007</strong></td>
<td><strong>Colantonio 2009</strong></td>
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<tr>
<td>Access to resources</td>
<td>Livelihood</td>
<td>Basic needs such as food, housing, and income and extended needs such as recreation, self-fulfillment</td>
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<tr>
<td>Community needs (e.g., are communities able to articulate their needs?)</td>
<td>Equity</td>
<td>Inter-generational justice among gender, race, class, and ethnicity dimensions (Fair distribution of income, environmental “goods” and “bads”)</td>
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<tr>
<td>Conflict mitigation</td>
<td>Insularity</td>
<td>Equality of rights, including human rights, and user and tenant rights, and indigenous people’s rights</td>
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<tr>
<td>Cultural promotion</td>
<td>Equity</td>
<td>Access to social infrastructure, mobility, local services, facilities, green areas, and so forth</td>
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<tr>
<td>Education</td>
<td>Poverty</td>
<td>Employment and other work-related issues, including for local small and medium enterprises</td>
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<td>Elderly and aging</td>
<td>Livelihood</td>
<td>Opportunity for learning and self-development</td>
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<td>Enabling knowledge management (including access to +knowledge)</td>
<td>Equity</td>
<td>Community capacity for the development of civil society and social capital</td>
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<td>Freedom</td>
<td>Democracy</td>
<td>Security (e.g., economic, environmental)</td>
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<td>Gender equity</td>
<td>Human rights</td>
<td>Health effects among workers, consumers, and communities</td>
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<td>Happiness</td>
<td>Social homogeneity</td>
<td>Social cohesion, inclusion, and interaction</td>
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<tr>
<td>Health</td>
<td>Equitable income distribution</td>
<td>Cultural diversity and traditions</td>
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<tr>
<td>Identity of the communities, price</td>
<td>Employment</td>
<td>Sense of community attachment, belonging, and identity</td>
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<td>Image transformation and neighborhood perception</td>
<td>Equitable access to resources and social services</td>
<td>Social recognition</td>
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<tr>
<td>Integration of newcomers (especially foreign migrants) and residents</td>
<td>Paid and voluntary work</td>
<td>Attractive housing and public realm</td>
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<td>Leadership</td>
<td>Basic needs</td>
<td>Quality of life, happiness, and well-being</td>
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<td>Justice and equity</td>
<td>Social security</td>
<td>Access to information about risks and the sustainability project</td>
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<td>Leisure and sport facilities</td>
<td>Equal opportunities to participate in a democratic society</td>
<td>Access to participation and decision making in different stages of the process and over time</td>
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<td>Less able people</td>
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<td>Proactive stakeholder communication and consultation throughout the process</td>
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<td>Population change</td>
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<td>Empowerment for taking part in the process (e.g., awareness, education, networking, economic compensation)</td>
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<td>Poverty and eradication</td>
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<td>Quality of life</td>
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<td>Socio-economic</td>
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<td>Economic security</td>
<td>Basic needs</td>
<td>Participating in the framing of issues, including defining criteria, scope, and subjects of justice</td>
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<td>Employment</td>
<td>Personal disability</td>
<td>Social monitoring of the policy, planning, and standard-setting process</td>
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<td>Informal activities/economy</td>
<td>Needs of future generations</td>
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<td>Partnership and collaboration</td>
<td>Social capital</td>
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<td>Infrastructures</td>
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Sustainable development most prominently entered the global political arena in 1987 in a report from the United Nations Commission on Environment and Development, also known as the Brundtland report. In response to the concept of sustainable development, a vast array of ideas, concepts, methods and tools to aid organizations and governments in addressing the socio-ecological problems has been developed. Though helpful in many contexts, the multitude of such support also risks creating confusion, not the least since there is no generally endorsed, overriding and operational definition of sustainability. Thus, there is a growing need for such a definition and for an understanding of how these ideas, concepts, methods and tools relate to sustainability and to each other. A framework for strategic sustainable development (FSSD) has been developed over the last 20 years to create such a unifying structure. The aim of this research is to contribute specifically to the social sustainability definition of this framework.

The research follows the Design Research Methodology. First, the social dimension of the FSSD as it stands currently was examined and described, as was the general field of social sustainability. Then, a new approach to the social side of the FSSD was created.

The studies revealed that the field of social sustainability, in general, is vastly under-theorized and under-developed, and that a clear framework is important and desired. They also laid out in which ways specifically the structure of the FSSD could be used to further develop the social dimension of strategic planning and innovation, and that currently this aspect of the FSSD is relatively under-developed. This assessment was followed by a first attempt at a clearer definition of social sustainability.

Based on these explorations, this research suggests five principles as a hypothesis to be used as a definition of social sustainability. The key terms are ‘integrity’, ‘influence’, ‘competence’, ‘impartiality’ and ‘meaning’. For validity purposes the results were cross-checked with other approaches and theories. The validity check shows that similar key-terms have been found by other researchers.

In conclusion, this research contributes with a hypothesis for a clearer definition of social sustainability, which is general enough to be applied irrespective of spatial and temporal constraints, but concrete enough to guide decision-making. This is a contribution to systems science in the sustainability field and it is a step towards creating an enhanced support for strategic planning and innovation for sustainability. Further testing and refinement of this theoretical foundation, and bringing it into practical use, will be the subject of the continued studies.