Exploring the possibility of a systematic and generic approach to social sustainability

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Abstract

There is a growing need to understand how existing concepts and tools for sustainability relate to each other and to a robust, trans-disciplinary systems perspective for sustainability. As a response, a group of scientists, including some of the authors, have developed a framework based on backcasting from sustainability principles over the last 20 years – the Framework for Strategic Sustainable Development (FSSD), also known as The Natural Step Framework. The intent of this study is to scrutinize the existing framework as regards its social dimension. The study demonstrates dichotomies and lack of robustness and proposes a way forward to make the social dimension of the FSSD more cohesive as well as operational.

Keywords: *Sustainability principles; Social sustainability; Framework for Strategic Sustainable Development, The Natural Step Framework; System analysis;*

1. Introduction

Scientists of various fields support the conclusion that society is currently on a long-term unsustainable course [1, 2]. Two-thirds of ecosystem services, which human society depends on, are being degraded or used in ways that cannot be sustained [3]. According to the World Bank 1.4 billion people in the world still live on less than 1.24 USD a day [4]. Human rights abuses, corruption, workers´ abuses, discrimination, a high rate of HIV/Aids, lack of access to education, among many other things, are still common place in many countries [5, 6]. Many societal actors, governments and a multitude of private companies worldwide are beginning to understand the crisis of un-sustainability and are asking for assistance in reorienting their activities in a sustainable direction. However, finding help is not always easy. A vast array of ideas, concepts, methods, and tools has been developed in response to the complex nature of the interrelated socio-ecological problems. Various kinds of management systems for Economy, Quality, Security, Health, Environment and Climate, as well as Corporate Social Responsibility (CSR) guidelines exist [7-11]. This variety of definitions, terms, approaches, methods and tools

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makes the field confusing and leads to a growing need to understand how they relate to sustainability and to each other [12, 13].

Previous attempts to be more systems oriented and strategic about sustainable development have built on attempts to create holistic scenarios for a sustainable future, and then to plan systematically to get there. 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 referred to as "backcasting", a term coined by John Robinson in 1987 in his work with energy futures [14-17].[2] Backcasting as a general approach is the first-order key element of being strategic and is in particular helpful when the problem to be addressed is complex and the dominant trends are part of the problem. This is clearly the case in sustainability, both ecological and social [14-17][3].

In backasting from scenarios as used by Robinson, a simplistic but rather specific image of the future, or a set of specific goals, is used as the basis of the planning. Backcasting from a robust definition of a goal, helps avoid sub-optimizations and sometimes even 'blind alleys' because it departures in planning from the full scope of the goal in the future – not from current technologies and the limitations of those. This allows for more robust estimations of future potentials and opportunities and avoiding fixing one problem by inventing another. An example, where this opportunity was not exploited, would be the introduction of DDT or CFC's, both of which were responses to current problems and demands but turned out to be a blind-alley from a whole sustainability perspective.

Backcasting from scenarios or specific goals also has some drawbacks [15]. First, given differing values, it can be difficult for large groups to agree on relatively detailed descriptions 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. Thirdly, 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?[4] 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.

Over the last twenty years, a group of scientists, including some of the authors, have explored the possibility to develop a framework based on backcasting from sustainability principles. This framework has since been elaborated and refined in theory [12, 25-27] as well as practiced in many organizations and sectors such as Electrolux and IKEA [25], Interface, Scandic Hotels and Collins Pine [28], Hydro Polymers [29], regions and municipalities [30, 31], Agriculture [32, 33], and transport systems [34]. This framework has also been applied

[2] While the methodology has been implicitly used for centuries, in war strategy for example [18], it was not until Robinson´s 1987 publication and his as well as Dreborg´s subsequent work that established this term as a methodology, applied to date mostly in energy and environmental work [14]. The methodology has also been used in the field of business intelligence [19].

[3] An example of an effort to use backcasting for sustainability purposes is the development of critical loads and their use in the European arena to mitigate emissions. The critical loads were derived in a backcasting process from ecological and social goals based on ecosystem function and structure [20-24].

[4] The term robustness will be discussed at more detail later on in the paper.

to relate various tools and concepts for sustainable development to sustainability and to each other [12, 27] and for academic education [35-38].

It is important to note that the term "Sustainable Development" and "Sustainability" are not synonymous. Semantically, the term sustainability describes a stage (or state of being), while sustainable development points at processes towards or within that state [39]. When backcasting from sustainability principles, the principles describe a goal, semantically a state of being. Furthermore, a goal can in itself be to comply with basic principles, or constraints, for sustainability, and the same basic conditions can then be applied to inform further technical and cultural evolution. More precisely, this framework focuses on these basic conditions or requirements that need to be fulfilled in order for the system to be sustainable as well as the application of these principles for backcasting planning.

2. Intent of the study and hypothesis

The above mentioned framework for strategic sustainable development (FSSD)[5] has an ecological and a social dimension.[6] The question explored in this paper is whether the Framework for Strategic Sustainable Development as it is formulated now allows for backcasting from social sustainability in a way that is operational enough. The intent of this study is to scrutinize the existing framework as regards the social dimension, specifically the definition of social sustainability in terms of basic conditions, with the hypothesis that the social side, when compared to the ecological one is not equally operational. This paper is the first in a series aimed at exploring a principled definition of social sustainability.

3. Methods

The analysis will be performed using the same generic five-level model for analysis of any systematic approach in any system that the FSSD was originally developed around [12]. The levels of the framework are the following:

1. *The Systems level* describes the overarching system within which analyses and planning occur, e.g. an organization or project within society (with its stakeholders, laws, norms etc.), within the biosphere (with its natural laws, natural resources, biodiversity, etc).
2. *The Success level* describes the overall principles that are fulfilled in the system (1) when the organization is in compliance with its vision, within constraints set by basic principles for socio-ecological sustainability.
3. *The Strategic Guidelines level* provides some generic and overarching strategic guidelines for planning and acting towards any goal (2). The core basic guidelines of the framework are: (i) With each investment strive to bring projects and organizations closer to compliance with the success principles (2). In doing so, strike a good balance between (ii) direction and advancement speed with respect to the success principles and (iii) return on investment. Other, "softer", guidelines are related to process, e.g. honesty, transparency, accountability and inclusiveness.
4. *The Action level* describes what actions are planned and carried out in line with the strategic guidelines.

[5] The Framework for Strategic Sustainable Development is called so because it allows backcasting from a set of basic conditions for sustainability (the minimum goal) and then a stepwise planning (development) approach to this goal.

[6] It also includes the economic dimension. See below.

5. *The Tools level* describes the methods, tools and concepts used to manage, measure and monitor the activities (4) so that these are chosen in a strategic way (3) to arrive at success (2) in the system (1). For example; ecodesign tools and environmental management systems.

4. Results

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[7] 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 thermodynamics, the conservation laws, the biogeochemical cycles, and how the exchange of 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 [40]. An equal analysis for the social side is not evident. 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: In the following, the reasoning behind the definition of ecological sustainability is described, after which the results of attempting to apply the same approach to social sustainability, are presented.

When the original framework was developed, the scientists started to derive criteria that the basic principles of sustainability had to fulfill in order to be robust and operational [26, 36, 39, 41]:

- Necessary, to allow a detection of incontrovertible and mandatory aspects and measures of sustainability;
- Sufficient, to not have gaps in the thinking;
- General, to allow inter-disciplinary and cross-sector cooperation;
- Concrete enough to inspire innovation, action and give direction;
- Distinct (mutually exclusive) to avoid overlaps and thereby allow for comprehension as well as development of indicators.

To arrive at principles meeting those criteria, the subsequent logics were followed: 'Sustainability' is a term that has become relevant only as a consequence of humanity's systematic contributions to un-sustainability, when the limits of sustainability is challenged or overstepped. Thus, we are trying to set the limits between sustainability and un-sustainability. It is therefore logical to look for *different overriding* mechanisms by which society is systematically eroding the ecological systems, and then equipping such basic mechanisms with a "not". What are the fundamental flaws in the design of the un-sustainable society and how can such be used as exclusion criteria for redesign of society with its organizations?

[7] As elaborated later on in this section

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 we will return to):

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…

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 1 below. From this follows the concrete gap we would like to explore regarding the identification of overriding mechanisms by which the social system can be eroded.

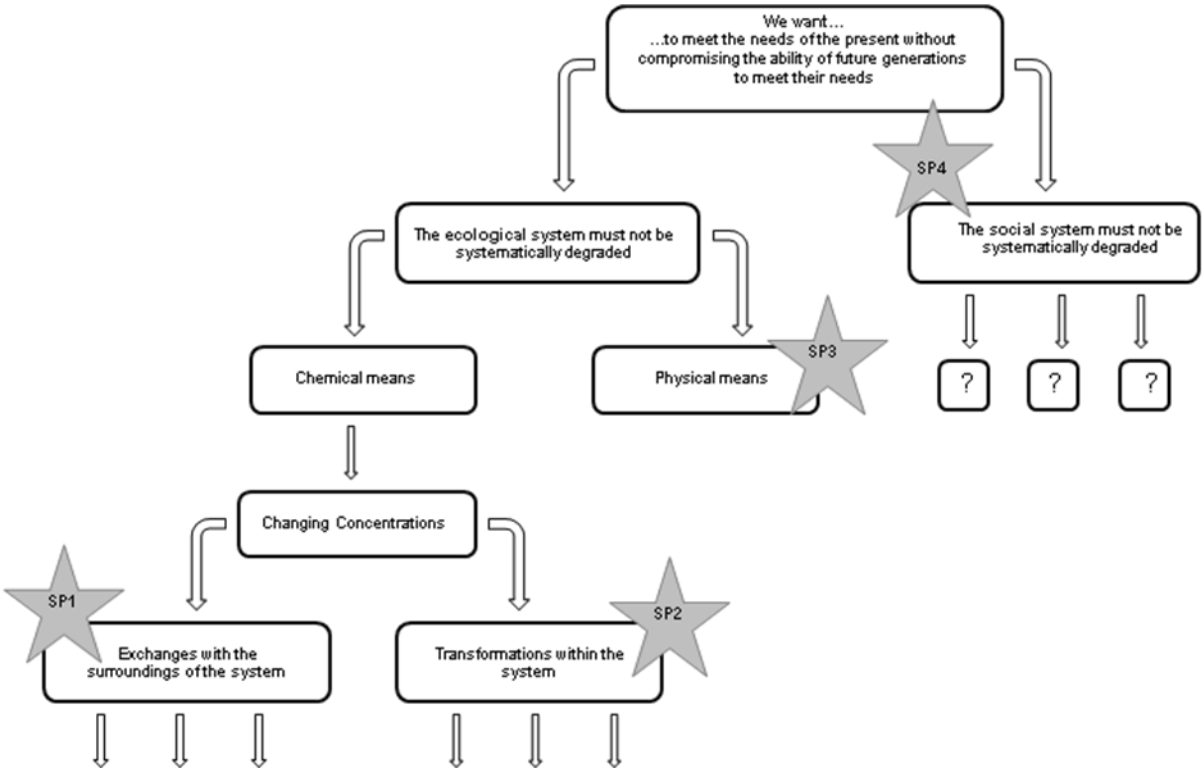

Figure 1: The ecological and social side of the Framework for Strategic Sustainable Development – gaps and imbalances are highlighted through its visual representation.

Starting with the Brundtland definition as something we want for humanity[8] and applying the logic laid out above, it is clear that we achieve sustainability (i) by not systematically degrading the ecological system and (ii) by not systematically degrading the social system (see figure 1). 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[9].

The overriding principle for ecological sustainability has already been further fleshed out into higher-order and more concrete principles (SPs 1-3), whereas there is nothing under the overriding principle for social sustainability. 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". This is not distinct from the starting point (the Brundtland definition). At least the overlap is considerable. Furthermore, whether this overriding description of social sustainability would follow a thorough analysis of the social system or not, remains to be investigated. Even if this description would hold to such scrutiny, the question remains, exactly *how*, expressed as basic mechanisms, does the design of our current society erode the capacity of people to meet their needs?

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).

5. Discussion

Studying social sustainability brings with it some inherent challenges that are not encountered when studying the ecological system. "We are looking at a system that we (as researchers) cannot observe as an outsider", it is often argued since studying the human social system means in fact the studying of ourselves. Further "that the social world is much too complex and far too interwoven with value statements, morals, and other intangible, non-measurable aspects to be studied as one would study an ecological system with traditional scientific methodologies". However, we do not think that this is reason enough to not even try. First, the ecological system is also complex. Secondly, there never has been such a thing as an un-researchable issue. All systems can be analysed, and complex and far-reaching objectives can always be attempted. It could even be argued that the most prestige-infected, contentious or controversial issues are those that need such research attitudes the most.

[8] "Meeting the needs of the present without compromising the ability of future generations to meet their own needs" [42] 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 analyse and plan for a sustainable future.

[9] "Economic sustainability" is often mentioned as a third pilar of sustainability. However, as Daly [43] points 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.

Perhaps is it precisely because of the perceived complexity and ambiguity, that a systems analysis, and systematic re-design approach to social sustainability from a basic principled level, should be attempted. Such an approach will probably shed light on interrelated aspects and relationships that may currently be overseen, and result in more generic guidelines for cross-sector and interdisciplinary modelling of social sustainability.

The analysis in the earlier section brought up unanswered questions. In order to follow the logic presented above, the first call to order would be to, as was done on the ecological side, explore the social system *enough* to identify overriding mechanisms of social un-sustainability. They would then need to be phrased in such a way that they could function as generic and concrete enough constraints for design of social sustainability. As this must be done in a cohesive and concrete way, our future research will build on group-modeling sessions with academics as well as practitioners from business and municipalities. This will also promote participation and establishment of ownership to the results and their ramifications when it comes to actions and changes to be made.

Our research questions from this discussion are as follows:

1. *Can the basic functional mechanisms of the social system be determined with sufficient accuracy and comprehension to feed into the second level of the analytical five-level framework presented above?*
2. *If so, what are some typical mechanisms of erosion of the social system and can these be clustered functionally so as to be converted into principles for social sustainability that meet the criteria of the current ecological definition 'necessary', 'sufficient', 'general', 'concrete' and 'distinct'?*
3. *If such principles of social sustainability can be derived, what are some strategic guidelines that can be developed to aid organizations to move towards social sustainability? Based on a deeper understanding of social sustainability, will such strategic guidelines differ from the ones applied for systematic approaches towards ecological sustainability?*
4. *How can methods and tools be developed such that they foster actions to be strategic to arrive at sustainability in the social system?*
5. *How can the framework's unifying capacity be applied to detect the relationship between other methods, tools and concepts and norms for social sustainability, and thereby increase the applicability of such?*

One 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, passed on as ethical norms and traditions through generations, also needed? If so, what norms would support this approach, and how could such norms be evaluated with regard to sustainability and in the context of the proposed framework? Regardless the outcome of such explorations, seeking to discover overtly destructive mechanisms to avoid at least them, should be helpful also for the social system.

Destructive elements of the system of operation can easily be overlooked or remain unidentified when engaging in small positive steps which has become a trend in many organizations today (e.g. local social initiatives such as support of soccer clubs, daycare centers, etc). The positive steps, of course, are important and should be continued, but not at the cost of an upstream approach to tackle elements that are systematically eroding the system, perhaps through indirect impacts in other parts of the world.

Since the above mentioned norms can be highly dependent on cultural context (although some form of the golden rule seems to exist in most cultures), it is the focus on these more general destructive elements, the upstream causes for social un-sustainability, which might still allow for a generic approach.

6. Conclusion

We have explored a broadly cited framework for strategic decision making towards sustainability, and demonstrated its dichotomies and lack of robustness in its social dimension, and proposed a way forward to make it more cohesive as well as operational. We are not convinced that the challenges described in dealing with the social system would necessarily make it impossible to arrive at a cohesive and well-structured framework that includes social sustainability. Such would rely on a structure solid and concrete enough in time and space 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. In forthcoming work, we are going to explore the theory of the FSSD, thoroughly elaborate it by modeling of the social system, scrutinize the outcome from cross-reading with some of the most cited protocols and frameworks for social sustainability, and then test its applicability in some real life analyses and planning.

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