

Returning the fruits of their labour: A Collective Social Entrepreneurship Approach to Scaling Nature-Based Solutions.

Thesis Coach: Pietro Versari
Co-reader: Maria Carmen Punzi
Name: Rowdy Klein
Student number: 612167
Date: 29/06/2023

Preface

During the writing of this thesis I was often in need of a short distraction. Aiming to score a quick shot of dopamine, I became a regular at my preferred news outlets. Reading that the public slowly catches up on potential consequences of our heating oceans, it soothes me in a way to encounter the words ‘ecosystem collapse’ more frequently. If the realisation grows that series of interconnected cascades are induced by countless nudges, then countless nudges can induce a series of interconnected cascades, right? I have always been rather optimistic. However, small acts performed by the many as an antidote to the harm done by a few, that sounds like something worthy of pursuing. Fortunately, the many inspiring contributors to this thesis are already dedicated to such a purpose. With a heart full of admiration and a head full of ideas I will happily join the ranks.

Hereby, I would initially like to thank the Bioregional Weaving Labs initiative for providing me the opportunity to submerge myself into the topics I want to devote my career to. Especially the people from Ashoka have put substantial effort into enabling access to a range of very knowledgeable and inspiring actors in the ecosystem restoration industry. In turn these contributors deserve additional praise for their daily efforts and for sharing their wisdom.

Secondly, acknowledgements are due to the Erasmus University and in specific the Global Business & Sustainability track. I have enjoyed education from some very bright minds who have made complexity an analytical framework for me.

Finally, I want to express my gratitude to my academic supervision, Pietro Versari and Maria Carmen Punzi, for providing the structural frames within which I was allowed to think freely.

Rowdy Klein,
Amsterdam, August 10, 2023

The copyright of the master thesis rests with the author. The author is responsible for its contents. RSM is only responsible for the educational coaching and cannot be held liable for the content.

Executive Summary

Introduction and aim of the study

Environmental inaction is driving up the costs society will have to bear beyond just its financial price tag. In pursuit to limit further decay and instigate safeguarding mechanisms, this study focuses on Nature-based Solutions (NbS) and their perceived ability to address the complex and interrelated socio-ecological characteristics of ecosystem interventions. Examples of these NbS include risk-mitigating approaches such as watershed management and regenerative agriculture.

Troubled by the impediments of an underdeveloped industry and the inherent absence of institutional infrastructure, the NbS concept is confronted with a lack of traction and doubts regarding its practical feasibility. Estimates suggest approximately USD 4.1 trillion needs to be allocated to NbS by 2050 to effectively mitigate climate change, biodiversity, and land degradation. One of its most pressing challenges is the distance to market for smallholders in remote landscapes caused by a lack of knowledge and resources.

Drawing from the literature, this thesis adopts a Collective Social Entrepreneurship (CSE) perspective to research its mediating capacities in relation to the feasibility of NbS. Where Social Entrepreneurship is broadly concerned with the maximisation of social value through the adoption of hybrid organisational forms, implementing the ‘collective’ part of CSE enables analysing the collaborating mechanisms and larger planning processes. Thereby strengthening the theoretical foundations of both CSE and Nbs.

The central question pursued is: *How does Collective Social Entrepreneurship influence the scaling of NbS?*

Methodology

A qualitative approach was favoured in alignment with the explorative nature of this inquiry. With focal attention to the landscape level, a sample of 9 practitioners and experts were interviewed based on semi-structured protocols. All these participants are positioned around the collective implementation of NbS. The obtained rich primary data was substantiated with secondary data predominantly derived from industry reports. The accumulated insights were subsequently analyzed following the grounded theory research approach, which led to the identification of the answer’s perceived core elements.

Findings

A model is presented that conceptualizes the collaborative scaling of NbS by displaying the interplay between actors and their adjacent functions across four hierarchical stages from infancy to maturation (Fig.2., p. 34). The initial stage captures 1) the cultivation of bottom-up socio-ecological regeneration, followed by the stages 2) starting CSE locally; 3) maturing CSE at scale; and 4) advocating institutional change. Essentially, CSE can function as a mechanism that could significantly assist in the creation of infrastructure by bridging the gap between the bottom-up and top-down dynamics of the NbS industry.

Noteworthy, it is that the cultivation of bottom-up socio-ecological regeneration needs to be continuously reinforced by ecosystem participants at higher levels until markets can function autonomously. In turn, as these landscapes develop, actors' stage-dependent responsibilities respectively evolve as well. Finally, the ambition to catalyze a whole region is perceived to contribute to the overall cost-effectiveness.

Nevertheless, due to industry-wide resource constraints present at every stage of development, the successful pursuit of a CSE approach cannot be ensured and necessitates ongoing reconfigurations, which in itself imposes new barriers.

Discussion and implications

Practitioners constantly need to (re)evaluate their relationship dynamics with the landscapes to prevent an unequal distribution of power so that intrinsic behavioural change becomes the driver for an upward NbS spiral. By focussing on value creation through an experimental setting in the landscapes, the potential for radical innovation and economies of scale can improve the equitable scalability of NbS. Additionally, the author posits there is a high risk of isomorphism in the industry that requires caution and better collaboration. When larger planning processes are adopted, investment can be pursued for bulk packages thereby satisfying investors' demand for larger-sized projects, reduced risk, and an increase in quality and efficiency. As a result, successful projects then contribute to iteratively lowering the existing barriers by systematically altering the industry's financial institutions.

Conclusion

Although CSE is certainly not a silver bullet, applying a collective scope to analyze the scaling of NbS is perceived to pose substantial benefits with regard to both the maximization of social value and the connection to the market. The posed complexity of such a structure is however sustained. Future research should seek to generalize the findings of this thesis as the novelty of both chosen domains demands theoretical advancement.

Table of contents

Preface.....	2
Executive Summary.....	3
Table of contents.....	5
List of tables and figures.....	6
Abbreviations.....	7
1. Introduction.....	8
1.2 Study rationale.....	10
1.3 Scientific relevance.....	11
1.4 Composition of the thesis.....	11
2. Theoretical Framework.....	12
2.1 Social entrepreneurship.....	12
2.2 Collective Social entrepreneurship.....	14
2.3 Nature-based Solutions as social entrepreneurship.....	15
2.4 Scaling NbS.....	17
2.5 Collective social entrepreneurship in NbS.....	18
3. Methodology.....	20
3.1 Research Context.....	20
3.2 Research design.....	21
3.3 Case selection.....	21
3.4 Data collection.....	23
3.5 Methodological Limitations.....	25
3.6 Ethical considerations.....	26
3.7 Analysis.....	27
4. Findings.....	32
Stage 1: Cultivating Bottom-up Socio-ecological Regeneration.....	34
Stage 2: Starting collaborative social entrepreneurship locally.....	36
Stage 3: Maturing CSE at scale.....	41
Stage 4: Advocating institutional change.....	44
5. Discussion.....	48
5.1.1 Avoiding business as usual through inadequate NbS implementation.....	48
5.1.2 Unlocking the Potential of Collective Social Entrepreneurship for Scaling Nature-based Solutions.....	49
5.1.3 Viability Challenges for Collective Social Entrepreneurship in NbS Scaling.....	51
5.2 Theoretical contributions.....	52
5.3 Practical implications.....	55
5.4 Limitations and future research.....	56
6. Conclusion.....	57
7. References:.....	58
7.1 Archival References.....	64
8. Appendices.....	65

List of tables and figures

Fig. 1. - Coding structure.

Fig. 2. - Representation of CSE dynamics within the landscape-based NbS industry.

Fig. 3. - The functioning of CSE.

Table 1. - Overview interviewee information.

Table 2. - List of industry reports included in the analysis.

Table 3. - Insights in theme concentration.

Abbreviations

BCG = Boston Consulting Group

BWL= Bioregional Weaving Labs

FAO = Food and Agriculture Organization

IUCN = International Union for Conservation of Nature

MOOCs = Massive open online course

NbS= Nature-based Solutions

NN = NetworkNature

SE= Social entrepreneurship

UNDRR = United Nations Office for Disaster Risk Reduction

UNEP = United Nations Environmental Program

WBCSD = World Business Council For Sustainable Development

WEF = World Economic Forum

WWF = World Wide Fund for Nature

1. Introduction

One 45-day competition in watershed management empowered citizens in 4700 Indian villages to pick up a shovel and dig trenches in the race to win a cash prize for their village (Paani Foundation, 2019). While only a relatively small number of villages were labelled as official winners, billions of litres of water are now retained resulting in increased soil fertility, significant improvements in food security and higher land profitability on a country-wide level.

This ecological intervention and its spillovers illustrate the potential of Nature-based Solutions (henceforth NbS). These NbS are most commonly defined by the International Union for Conservation of Nature (IUCN) as “*actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits*” (Cohen-Shacham et al., 2016, p. 5). Supported by renowned institutions such as the Intergovernmental Panel on Climate Change, the World Economic Forum, and the United Nations (McQuaid et al., 2021), these NbS posed as promising strategies to mitigate the globally ongoing cascades in floods, erosion, landslides, deforestation and desertification, and have the perceived capabilities to limit their adverse effects on issues such as water retention, global warming, and carbon sequestration (Seddon, 2022). Nevertheless, questions emerge regarding whether its theoretical promises are capable of delivering practical salience.

This is predominantly due to the absence of funding, dysfunctional funding allocation and lack of operational clarity (McQuaid et al., 2021). For example, it is estimated that for NbS to effectively help address challenges such as climate change, biodiversity, and land degradation, approximately USD 4.1 trillion needs to be allocated by 2050 (UNEP, 2022). By contrast, presumably less than 15% of current climate-related investments can be traced back to the NbS industry. Besides, as a newly emerging industry, the existing NbS are small-scale, scattered, and face significant constraints when attempting to scale up (McQuaid et al., 2021). Hence, these impediments hamper the chances of wide-scale NbS adoption (Nesshöver et al., 2017).

As a consequence, the slow uptake of NbS further widens the gap between the required environmental action and what is currently executed. More specifically, this endeavour seeks to narrow the gaps for NbS regarding both its resource deficits and operationalization.

In this pursuit, the focal topic of interest is Collective Social Entrepreneurship (CSE). Broadly conceptualized, CSE adopts the notion of collaboratively organizing to better address social issues (Montgomery et al., 2012). Drawing back on the watershed illustration above, its derived benefits from the implementation of an NbS can additionally be attributed to the operationalization of collective action that enabled a transformation with reduced reliability on funding. Therefore, it is proposed in this thesis that CSE can potentially be advantageous to the implementation of NbS.

Logically, CSE is rooted in the Social Entrepreneurship (SE) domain. The SE phenomenon is concerned with the pursuit of maximization of social value creation through strengthening the market conditions for a social cause following opportunity recognition and exploitation (Mair & Marti, 2006; Nicholls, 2008; Hlady-Rispal & Servantie, 2018). This is in alignment with the NbS industry as its theoretically attributed outcomes, improved socio- and ecological well being, are an equivalent of social value maximization. Additionally, while rich in opportunity, its marketization is underdeveloped. However, while the popular SE literature focuses on the individual social entrepreneur as the championing agent of change, substantiated social development more often results from collective action performed by groups of stakeholders, networks, or social movements that pursue a common goal (Spear, 2019). Hence, the CSE literature proposes that the purposive interplay of these collections of SE actors is potentially more likely to better progress the maximization of social value (Montgomery et al., 2012).

Although collective organizational forms such as cross-sector partnerships (e.g., Selsky & Parker, 2005) and cooperatives (e.g., Alinsky, 1941; Spear, 2006) have been widely studied, focussing on CSE can pose fruitful insights due to its novelty. On the one hand, the presumed enablers are considered to occur through the exchange of skill, knowledge and finance, thereby forming strategic links that aid the development of legitimacy (Spear, 2019). On the other hand, being peers in an emerging industry likely poses trade-offs in competition and collaboration (Seanor & Meaton, 2008). Besides, orchestrating a network of actors poses additional difficulties to a social enterprise's operations which are traditionally already characterized by a lack of resources (Montgomery et al., 2012). Moreover, earlier findings suggest that social entrepreneurs presumably struggle in creating networks that are functional (Sharir & Lerner, 2006; Phillips et al., 2015), mainly because of incoherent goals, expectations, and cultures (Phillips et al., 2015; Selsky & Parker, 2005). This ongoing divergence in the dynamics revolving around CSE provides an interesting additional layer of depth worthy of research.

In sum, it is posed that mainstreaming and upscaling NbS into an industry that is effectively capable of addressing a myriad of socio-ecological challenges while overcoming its financial barriers is more likely the result of coordinated collaboration as opposed to individual success. Nevertheless, the proposed approach of applying a CSE lens yields its own set of dualities that pose fruitful avenues with regard to its practical implementation. Therefore, this study is designed to address the presented gaps for the operational and financial feasibility for scaling up NbS through the lens of CSE implementation. By conducting a multiple case study design composed of nine cases within the NbS industry, positioned at varying hierarchical levels and life-cycle stages, and analyzing their CSE interactions, this study aims to substantiate the literature predominantly with insights on the theoretical and practical dynamics of both domains.

1.2 Study rationale

In this study the parallel is drawn between maximising social value creation and NbS as potential means to this end. Following the logic that our future societal welfare is intertwined with our ecological welfare, there is a purpose for advancing knowledge in a field that in essence is concerned with both. There is an initial uncertainty regarding whether the sustained lack of adaptation marks the NbS domain as only theoretically substantial or if its problem-solving capacities can succeed in establishing a physical foundation. In bridging this gap, this inquiry initially focuses on analyzing the improvement of its market circumstances by adopting a CSE perspective. Anticipating that the pursuit of a collaborative approach can be influential in overcoming the impediments imposed by the absence of proper institutional mechanisms, there is a demand for researching these processes.

Specifically CSE is perceived as suitable as the focus on the interorganizational layer of similarly-oriented entities has substantial overlap with the characteristics of the emerging NbS industry. The industry is predominantly made up of small-scale suppliers that face barriers to survival in their pursuit of social value creation. Therefore, by shifting to the collective level, additional valuable insights on scaling can be uncovered. As a second reason for inquiry, this endeavour evaluates whether its feasibility of CSE outweighs its complexity by analyzing the scaling of NbS. Therefore the aim of this thesis is to answer the following question: **How does collective social entrepreneurship influence the scaling of nature-based solutions?**

1.3 Scientific relevance

To the best of the author's knowledge this is the first scientific effort undertaken to combine the two strands of CSE and NbS literature. Previous research on CSE has predominantly worked on its acknowledgement and conceptualization (Montgomery et al., 2012; Pless, 2012; Saebi et al., 2019). Its inclusion comprises a response to the call to analyze the SE phenomenon beyond the individual level to gain insights into the action formation mechanisms at the collective level (Montgomery et al., 2012; Saebi et al., 2019; Dufays & Huybrechts, 2014). Additionally, this inquiry includes the request to research the dynamic portfolio structures of CSE (Montgomery et al., 2012), by coupling the theory with an empirical setting that consists of practitioners. Concluding the CSE aspect, the outcomes could potentially strengthen the concept by mitigating the critique raised. Following the intent of this study it is argued that collections of practice-bounded SE yield increased capacities as a network as opposed to the critique on their dispersed configurations (Sharir & Lerner, 2006; Phillips et al., 2015; Selsky & Parker, 2005). Besides, instead of further fragmenting the SE literature (Saebi et al., 2019), this thesis is perceived as an effort to position NbS as a specific subset of SE.

From the perspective of the NbS domain, prior literature was predominantly concerned with macro, policy, or financial aspects. Hence, focussing on the internal orchestration of industry-level cooperation poses an explorative incentive. This is further leveraged by taking into account the demand for researching larger planning processes for NbS (Albert et al., 2021) opening up the potential to improve its operational clarity (Nesshöver et al., 2017).

1.4 Composition of the thesis

In the theoretical framework a Collective Social Entrepreneurship perspective is adopted that sets the frame for the research. Elaborated is on its structural antecedents and the included perception of scaling. It also positions Nature-based Solutions (NbS) within the SE domain, explaining its origin, and impediments, while justifying the comparison with SE. Finally, through constructively combining the knowledge of both fields, CSE is leveraged as a lens to pursue the scaling of NbS.

In the methodology section, the design choices of the study are explained. Chosen is for a qualitative approach based on the principles of grounded theory (Eisenhardt, 1987;

Glaser & Strauss, 1967; Gioia et al., 2013). Furthermore, insights are given on the selected sample from which data is gathered through semi-structured interviews. Supplemented with archival data, the findings section projects the composed model. The purpose of the model and its underpinnings is to formulate novel theories regarding the research question and its underlying academic fields. Finally, the most important findings are discussed, after which both practical and theoretical contributions will precede the study's limitations and suggestions for future research.

2. Theoretical Framework

2.1 Social entrepreneurship

In order to comprehend the phenomenon of Collective Social Entrepreneurship (CSE), this section provides an explanation of its antecedent Social Entrepreneurship (SE). Expository of the sum of its parts, SE can be captured by the process of recognizing societal needs and opportunities, followed by the creation and marketable delivery of social value through a myriad of organisational forms (Mair & Marti, 2006; Nicholls, 2008; Hlady-Rispal & Servantie, 2018). These forms are labelled hybrid organizations as they generally pursue the dual objective of social value creation and financial viability and can adopt both distinct and fluid forms across non-profit, private for-profit and public sectors (Doherty et al., 2014). Considering this broad variety of possible configurations to create and deliver products or services, SE clearly becomes an ambiguous concept (Pless, 2012). Simultaneously, with such abundant potential its materialization is worth pursuing.

From a business perspective, SE is set apart from traditional entrepreneurship as the underserved market segment it addresses is directed at a substantially different section of the economy (Pache & Santos, 2013; Pless, 2012). The section in which most social service providers are located are institutional voids (Mair & Marti, 2009). Institutional voids encompass underserved and persistent issues present at the intersection of markets and society that generally lack the appropriate resource allocation by state- and for-profit actors to relieve the issues. Examples of industries that commonly posit institutional voids include education, welfare, the environment, and health care (Weber et al., 2012). Contrary to institutional voids which depict the absence of mechanisms, institutions encompass the presence of such structures in our society. Institutions refer to both formal and informal rules and beliefs, accumulated over years of development and deemed necessary to establish

development while implicitly or explicitly influencing desired behaviour (North,1991; Scott, 2005). The absence of such a regulatory context often indicates underdevelopment which constitutes the need for SE (Mair & Marti, 2009; Stephan et al., 2015). Described briefly, SE differs from traditional entrepreneurship as its focal domains are sectors which are partially omitted by our current institutions.

Characterized by inertia to change, these manifested institutional voids hinder market functioning, hamper market development and impede market participation (Mair & Marti, 2009). They pose the example of how the maturing of microfinancing, initially a measure to alleviate poverty by including marginalized actors in the market, is actually imposing incremental restrictions on women through unfavourable interest rates. As a result, this places them even more in positions of debt and exclusion thereby proliferating the existence of the void. Moreover, the actors in positions of power, in this case, the lenders, accumulate more wealth and impede actual development. In this instance of an institutional void those who cannot participate are neglected with all kinds of negative externalities trickling down on society as a whole. Combatting this deterioration requires support from social intermediaries.

From the social perspective, SE differs from other initiatives such as foundations or NGO support because of its respective market and innovation orientation in the delivery of products or services (Zahra et al., 2009; Miller et al.,2012). Understandably, the inaccessibility of tangible and intangible resources in institutional voids is additionally commonplace within social entities (Mair & Marti, 2009). As illustrated in the example above, this poses a danger that ineffective approaches fail to relieve the situation. By applying band-aid solutions the focus is directed at addressing symptoms instead of root causes (Westley et al., 2010). With the aim of being more effective than its social counterparts, this thesis adopts the conceptualisation of SE as *“innovative and effective activities that focus strategically on resolving social market failures and creating opportunities to add social value systematically by using a range of organizational formats to maximize social impact and bring about change”* (Nicholls, 2008, p. 23). With increased caution regarding the root structure in their designed interventions, SEs appear the most suitable intermediaries to improve the livelihoods of disadvantaged minorities.

According to Alvord et al. (2004), SE consists of integrating one or multiple of the following three methods: building local capacity, disseminating a package of innovations, and building a movement. Building local capacity is focussed on transferring capacities such as knowledge to the targeted audience thereby increasing their capabilities vis-a-vis the barriers they face. The second approach, disseminating a package of innovations, aims to satisfy a

need by enhancing beneficiaries' accessibility to goods or services. An example here is a collaboration between international and local Zambian telecom providers on increasing rural connectivity (Matthee et al., 2007). Finally, when building a movement, the efforts are directed at empowering disadvantaged minorities to address the limitations imposed on them (Alvord et al., 2004). This approach aims to alter the status quo by increasing the political voice of previously neglected groups.

In sum, social entrepreneurship emerges from the motivation to pursue positive change through hybrid configurations of market-oriented organizations and mobilizing approaches to improve the autonomous livelihoods of those faced with unequal opportunities due to a lack of support mechanisms.

2.2 Collective Social entrepreneurship

Although single SEs can be aligned with the prescribed organisational forms of Alvord et al. (2004), The typologies such as 'disseminating a package' and 'starting a movement' are inherently tied to a collective operationalization. Additionally, if beneficiaries are unable to bridge their gap to the market themselves, enabling this likely requires an interplay of political, social, economic, and cultural factors (Marhdon et al., 2010). Essentially, creating the innovative synergies necessary to maximize impact requires purposefully pursuing alterations in power, routines, and beliefs (Mumford, 2002). Following this reasoning it is implausible that an individual SE can successfully fulfil this responsibility. Instead, it is more probable that such changes are induced by collections of actors that pursue a common goal (Spear, 2019). Therefore, shifting the focus from the individual level to the collective level aligns better with the maximization of social value.

Beyond acknowledging that SE is embedded in systems comprised of various actors, increasingly the argument is made that purposely organizing as a collective is likely to contribute to the maximization of social impact (Montgomery et al., 2012). As a result, they pose Collective Social Entrepreneurship (CSE) as a strategy for gathering both complementary and diversified hybrid organizations and collaboratively utilizing business principles to approach social problems. One limitation of this conceptualization, however, is that the emphasis on business principles excludes a wider range of methods such as addressing practices, rules and regulations to enable the desired change (Spear, 2019). Additionally, the author mentions that any form of collective action requires the involvement of citizens. Nevertheless, a collective typology for SE does pose its strengths.

Where both interpretations do intersect is that purposely sharing skills knowledge and finances could benefit the value delivery and the creation of legitimacy (Montgomery et al., 2012; Spear, 2019). Additionally, this collective approach is perceived to contribute to the gathering of resources from a variety of actors that can be exploited to bring together supporters, represent multiple perspectives, gain trust, and reduce costs (de Bruin et al., 2017). CSE can be homogenous or heterogeneous and it involves either pooling or trading alliances (Montgomery et al., 2012). Pooling alliances allow organizations to share similar resources, enjoy increased purchasing power, enhance leverage over other actors in the supply chain, or jointly build new skills, as in the case of shared R&D ventures in technology and energy industries. Conversely, trading alliances allow for the sharing and exchange of complementary resources, whereby each party offers something unique or different to the other. Empirical evidence regarding a sample of 147 SE projects on intentional collective organization additionally suggests that as time matures, the collective becomes a crystallized asset that is leveraged for both organizational and societal gain (Dufays & Huybrechts, 2012). These combined capabilities make CSE potentially a suitable approach to address the underdevelopment of the NbS industry.

2.3 Nature-based Solutions as social entrepreneurship

As the term indicates, NbS is a concept that emphasises nature as a means to address a multitude of challenges we face in our current day and age. As mentioned in the introduction, the definition most commonly referred to captures NbS as *“actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”* (Cohen-Shacham et al., 2016, p. 5). What prevails here is that the intersection of well-being and biodiversity is narrowly associated with ecosystems and their health. For example, NbS can be implemented to improve food security, watershed management, natural disaster mitigation, reverse biodiversity loss, and combat air pollution, heat waves, flooding, and droughts (Cohen-Shacham et al., 2016, Fastenrath et al., 2020). Designed interventions, such as community-based regenerative agriculture and education (Herenboeren, 2023), possess the capabilities to pivot the ongoing ecological deterioration while enriching biodiversity and improving well-being. Things that prevail in this example already are 1) the correspondence with the institutional voids of health, environment and education (Weber et al., 2012); 2) seeking solutions deeper than band-aid solutions (Westley et al., 2010); 3) the

possibility to induce local capacity, disseminate a package as well as building a movement (Alvord et al., 2004), and 4) how its properties contribute to the maximization of social value. Based on these characteristics NbS can be considered a category within the SE domain.

The relatively novel concept of NbS finds its origin in the ecosystem approach which underpins the necessity for ecological health and biodiversity as a prerequisite for human well-being (Convention on Biological Diversity, 2004; Cohen-Shacham et al., 2019). What sets these two apart, however, is the more central role human interventions play in managing these ecosystem services (Cohen-Shacham et al., 2016). Ecosystem services refer to all the value that is provided by natural systems and include for example, fresh water, crops, meat, flood mitigations, carbon sequestration as well as space for recreation (Biggs et al., 2012). Following the NbS logic, healthy ecosystems then become the result of humanly induced sustainable development which makes NbS the favoured alternative in policy and practice compared to nature conservation for its own sake (Cohen-Shacham et al., 2019).

However, when incorporating a human factor, ultimately the dynamics of the interventions change as well. Ecosystems are dynamic and human interventions in one place alter the behaviour of variables elsewhere in the system (Ferraro et al., 2015; Cash et al., 2006). Hence, by favouring one ecosystem service over another, contextual trade-offs are likely to come into play (Nesshöver et al., 2017). With various stakeholders having equally diverse needs upon which their livelihoods might depend it becomes imaginable that individual agendas hamper the process of equitable decision-making (Cohen-Shacham et al., 2019). As a result, shortsightedness in decision-making processes can potentially induce adverse effects on ecosystems (Melanidis et al., 2022). This functioning relates to the type of band-aid solutions failing to properly address the root causes (Westley et al., 2010). Moreover, what prevails here is the need for a collective approach coherent with CSE. Namely, bringing together supporters and multiple perspectives, and gaining their trust (de Bruin et al., 2017). However, critics argue that the involvement of mankind imposes the risk of opportunistic economic behaviour (Melanidis et al., 2022). Therefore, caution is required when implementing NbS to limit the extractive potential and enable the maximization of social value.

To properly implement NbS as an instrument for sustainably improving biodiversity and well-being, Cohen-Shacham et al. (2019) state the importance of four propositions to guide a weighted operationalization. Initially, the implementation of an NbS can be done alone or in an integrated matter with other solutions to foster social value delivery. Supplementing NbS with, for example, technological innovations such as satellite imagery or

geothermal measurements enables more integrated approaches that can result in higher effectiveness (McQuaid et al., 2021). Secondly, NbS should be applied in consideration of the landscape level (Cohen-Shacham et al., 2019). When NbS approaches take into account the landscape level it encompasses the co-dependent functioning of multiple ecosystems, consisting for example of forests, grasslands, wetlands, habitats, agricultural land and semi-natural areas combined (Albert et al., 2021). Considering the landscape scale minimizes the risk of implementing NbS in an ineffective or even harmful way. Third, the success of NbS is dependent on the inclusion of natural and cultural contexts (Cohen-Shacham et al., 2019). Disregarding the equitable inclusion of the local community and their site-specific knowledge oftentimes leads to an overall lack of credibility and legitimacy amongst various stakeholders and can ultimately lead to failure (Cash et al., 2006; Chatterjee et al., 2022; McQuaid et al., 2021). Fourth, NbS needs to be an integral part of the overall design of policies, and measures or actions, to address a specific challenge (Cohen-Shacham et al., 2019). For the NbS industry to be adopted as a functional strategy, the alignment between policy and practice is necessary for any working situation to be replicated elsewhere (Cohen-Shacham et al., 2019). Only this way the overarching challenge can effectively be mitigated. This last proposition introduces the topic of scaling through replication in relation to NbS while simultaneously leveraging the ‘building a movement’ typology by inducing friction to the political status quo.

2.4 Scaling NbS

By selecting the landscape level as a strategically positioned unit of analysis both the ecological integrity is honoured while the various present stakeholder groups can be framed and their subsequent needs identified and negotiated (Cohen-Shacham et al., 2019). However, when attempting to tailor a range of NbS innovations to the landscape level a two-fold occurs in scaling NbS.

Similar to the SE literature, the most common endeavours focus on how individual NbS obtain the means and resources to scale to the landscape level. However, this is problematic due to a number of barriers (Cohen-Shacham et al., 2019). Initially, in extension to the SE literature, most social initiatives face financial constraints to a certain extent (Mair & Marti, 2009). Additionally, with the industry in its infancy stages, the large majority consists of micro-enterprises and lack considerable skills (McQuaid et al., 2021). Accordingly, the industry faces underdevelopment of appropriate policy, a lack of access to

both public and private funding, as well as the absence of empirical proof and measurements (McQuaid et al., 2021; Cohen-Shacham et al., 2019; Raymond et al., 2017). As this uncertainty significantly increases the risk profiles of NbS, private finance makes up only 14% of the industry keeping them an unattractive alternative as opposed to grey infrastructure (McQuaid et al., 2021). A notion here should be made on the partly uncapturable value of natural and social attributes and that higher investment upfront potentially enable increasing returns by generating more resilient alternatives (Elmquist, 2015). However, whether the common absence of private funding is legitimate or not, the prospects for mainstreaming individual NbS to the landscape level are perceived as relatively poor. This distance to the market makes it a favourable endeavour for applying SE principles. Besides, the narrow focus on scaling separate innovations is difficult to align with the principles of well-designed NbS approaches and their respective holistic integration. If scaling SE in a void pursues the maximization of social value delivered through the dynamic interplay between ranges of actors to target the root causes, then scaling NbS fits that description. In that case, the same conclusion can be drawn that scaling NbS essentially moves beyond individual organizations and needs to become a collective effort.

2.5 Collective social entrepreneurship in NbS

To further elaborate, this pursuit is directed at connecting and scaling a range of NbS that to a reasonable degree span and coordinate the needs of a landscape-based approach.

Theoretically and empirically there is not much known about connecting existing NbS (Fastenrath et al., 2020). Nevertheless, there is an emerging call for larger planning processes that synergize and extend clusters of NbS to increase socio-ecological resilience (Albert et al., 2021). Applying the CSE logic to this request, actively pursuing collaborations will likely contribute to the sharing of skills knowledge and finances and the creation of legitimacy (Montgomery et al., 2012; Spear, 2019). It is therefore that CSE is posed as a lens to analyze the scaling of NbS.

Notwithstanding, all previous barriers at the individual level are persistent at the landscape level (Cohen-Shacham et al., 2019). However, these might be partially circumventable through multiple enablers. Firstly, with an overreliance on grants and subsidies, the predominant source of NbS funding, a collective application can be beneficial for large-scale endeavours (McQuaid et al., 2021). Subsequently, formally or informally organizing in networks poses opportunities to share knowledge and resources, build

infrastructure and legitimize an industry (Kimmel and Hull, 2012). Moreover, such a cluster will almost inevitably span a range of actors from the field to the policymakers needed to implement system-wide action (George et al., 2016). Combining these insights, resources and data of multiple NbS, could then aid in strengthening for example impact measurement and collecting evidence (McQuaid et al., 2021), which in turn might iteratively lower the barriers further. Following this logic, CSE is expected to reasonably improve the prospects for NbS.

However, becoming a CSE initiative requires intentionally allocating effort and resources to maintain the relationship structure (Montgomery et al., 2012). With the majority of individual NbS being scattered minority endeavours, the question is posed regarding whether the feasibility of CSE outweighs the complexity. Besides, the emerging industry likely poses trade-offs in competition and collaboration (Seanor & Meaton, 2008) as one's resources are already limited (Montgomery et al., 2012). This lack of conclusiveness highlights the necessity for this study allowing for the analysis of the discrepancy within CSE through its application to the scaling of NbS.

In doing so, this thesis aims to answer a call from academia to broaden the levels of analysis beyond individual SE by additionally including collective forms of social entrepreneurship (Pless, 2012). Much of the existing work in social entrepreneurship only operates on a micro-level, and more research is needed to understand action-formation mechanisms on the meso-level (Saebi, 2019; Dufays & Huybrechts, 2012).

In sum, the exploration of CSE and its intersection with NbS reveals the potential for collective action to maximize social impact. SE, with its focus on addressing institutional voids and creating social value, offers a distinct approach to traditional entrepreneurship. NbS, on the other hand, leverages the power of nature to tackle societal challenges while promoting well-being and biodiversity. The concept of collective social entrepreneurship CSE emerges as a strategy to connect and scale NbS initiatives, pooling and trading resources among hybrid organizations to address complex social and environmental issues. By intentionally organizing as a collective, it is anticipated actors can leverage their complementary strengths, share knowledge, and mobilize resources for greater effectiveness. Although challenges do persist, such as limited funding and coordination, for NbS and conceptual ambiguity on the operationalization processes for CSE. Therefore, the remainder of this research is aimed at constructing an answer to the research question to further develop the scientific foundations of both fields.

3. Methodology

3.1 Research Context

The foundation of this thesis was established through a collaboration with the BWL initiative. A mutual agreement was formed after an open call through the university channel. The request was aimed at thesis students interested in researching the scaling strategies and business models of promising NbS. This led to the selection of five additional students to perform a thesis study within a similar domain. Noteworthy, each student is following an individual inquiry. The only set perimeters were researching ‘business models and scaling strategies of NbS’ and no restrictions have been placed on additional subject matters or chosen procedures. An overview of their respective endeavours can be found in the appendices section (Appendix A).

The Bioregional Weaving Labs is a collective initiated by Ashoka, Commonland and the Presencing Institute to restore 1 million Ha of land- and seascapes across ten European bioregions through bottom-up regeneration (Müller et al., 2022). The initial partner, Ashoka, has a credible reputation as the world's largest network of social enterprises. Secondly, Commonland is a substantial global actor in the landscape restoration industry applying a 4-returns framework to projects that facilitate the return of ecological, social, economic and inspirational capital to degraded sites and communities. Thirdly, the Presencing Institute is aimed at inducing systemic change behaviour in individuals, organizations, governments and multi-sector structures by providing training on leveraging social innovations. With this summation of skills already implicitly touching upon the subjects of this thesis, their combined efforts in the BWL consortium are significantly associated with CSE and NbS.

In pursuing its goal, BWL is cultivating a network of cross-sectorial actors that will be collectively transforming ten ecologically degraded bioregions into independently functioning landscapes with self-sufficient economic output for the local communities. Being in the second year of this pursuit, initial task forces are deployed for the majority of the selected bioregions (Müller et al., 2022). The Ashoka team has curated a portfolio containing approximately 35 social entrepreneurs with NbS-related business models (appendix B), who are perceived to have the combined capabilities to orchestrate the BWL ambitions. Under the supervision of Ashoka Co-director Karin Müller and BWL Co-founder Noa Lodeizen, access to this selection of entrepreneurs is granted and guided.

3.2 Research design

This thesis is interested in investigating CSE within and between NbS and its perceived effects on scaling. Given the absence of substantive measures or numerical data for NbS itself and the related human and lingual dynamics to collective social entrepreneurship, a qualitative research strategy is most appropriate for answering this research question, as this type of study is more applicable to social phenomena than quantitative designs (Bell et al., 2018). Because the required types of data do not align with strictly testing and falsifying particular theories of hypotheses, a deductive approach is unsuitable for this research. Instead, applying inductive reasoning enables the discovery of novel patterns which helps in strengthening the theoretical foundation of a subject (Bansal et al., 2018). Following these foundations, chosen is for a qualitative design based on inductive reasoning.

Due to the uncrystallized nature of the topics NbS and CSE, an exploratory motive is adopted to allow for openness with regard to the findings. This will be pursued by following a multiple-case study approach. Utilizing a multiple case study design serves the objectives of answering the how and why questions while no form of behavioural control is placed on the subjects (Yin, 2009). More specifically, building theory from multiple case studies, the empirical findings are a nearly direct representation of the dynamics in the phenomena of interest (Eisenhardt, 1989). This poses a strength on the inferences made. Therefore, in understanding how and why NbS entrepreneurs are attracted to, or repelled by purposely adopting a collective structure, multiple case studies and their rich data appear to be the appropriate fit. Nevertheless, case studies pose weaknesses as well. The richness of data and specificity of the context increase the complexity of theory building and obstruct its respective transferability (Eisenhardt, 1989). To deal with the complexity of data, a Grounded Theory approach is perceived as capable of sensemaking (Glaser & Strauss, 1967). The Grounded Theory method posits that instead of verifying hypotheses based on pre-existing theories, theories can be formed based on empirical data. As the construction of novel theory is the focal purpose, further generalizability should not be prioritized (Charmaz, 2006).

3.3 Case selection

The scope of CSE encompasses the transition from individual to collective levels (Montgomery et al., 2012; Saebi et al., 2019). when applied to the domain of NbS, this

implies that there are two relevant units of analysis: individual NbS projects occurring at the landscape level and overarching collaborative networks. In order to gain a comprehensive understanding of the dynamics at these two levels, the following three case types are included in this research: Location-based NbS-oriented social enterprise, inter-landscape NbS network, and local communities engaged in NbS. The additional relevance of the last type results from the vital role local communities occupy in NbS implementation (Cohen-Sachem et al., 2019). Taking empirical measurements at these three levels will guide the formulation of the answer to the research question.

With the majority of NbS development and its respective degree of maturation occurring in Europe, this setting is chosen as the primary context for the case sampling. As the field is in its relative infancy, additionally including more developed initiatives in the sample provides the possibility to strengthen the analysis and subsequent theory. Researching distinct life-cycle stages is perceived as useful when conducting cross-case comparisons in order to examine their similarities and differences (Eisenhardt, 1989). Although the primary setting dictates a European focus, a significant proportion of the cases participates in global activities. Therefore, chosen is to include rich empirical data on these activities when this is useful for making comparisons.

The case selection process employed two distinct approaches. Firstly, the collaborating partner in this research, BWL, provided access to their network of NbS. Following the first approach, a combination of convenience sampling and purposive sampling was applied (Bell et al., 2018). The sampling can be perceived as convenient as there was a pre-established relationship. Subsequently, the applied purposive sampling approach followed the theoretical sampling reasoning. As a non-probability form of sampling, this grants the researcher the ability to select a sample (Bell et al., 2018). As a consequence, this entails that the researcher is restricted in making generalizations about the wider population. However, theoretical sampling is well-aligned with the principles of theory development as it allows the researcher to reach interviewees with empirical properties that are to a significant extent comparable to the theoretical underpinnings of the research (Eisenhardt, 1989). To correctly apply theoretical sampling, certain characteristics need to be at the foundation of the selection (Bell et al., 2018). Similar characteristics the cases needed to possess were: 1) being involved in NbS-related operations; 2) participating in a collective structure; and 3) being in the process of scaling up. These qualifications were ensured upon and shaped based on the prior available documents as well as through informant validation. Through the initial BWL channel, this resulted in the participation of three cases.

In line with theoretical sampling as an ongoing process (Glaser & Strauss, 1967), the second selection was based on their homogeneity with regard to the acquired BWL participants. However, in this pursuit, additional attention was directed to select cases in distinct life-cycle stages to serve as data for comparisons (Strauss & Corbin, 1998). The researcher performed desk research on the Internet, predominantly through an option on LinkedIn that provides comparable companies. Based on the portfolio from the BWL initiative, the suggested recommendations were checked for eligibility by visiting their company pages. LinkedIn additionally served as the platform through which outreach was performed. This resulted in four additional participants who both sufficed the criteria and accepted the invitation. Finally, a form of snowball sampling (Bell et al., 2018), was applied to access two community members. Two cases from the second subset set up the connection with their respective communities. In total, nine cases were selected of which their additional properties can be found in the table below (Table 1.).

Table 1. Overview interviewee information.

Informant #	Company type	Life-cycle stage	Role interviewee	Duration (min)	Language conducted
I1	Location based NbS-oriented SE	Growth	CEO	65	English
I2	Location based NbS-oriented SE	Starting	Founder	35	Dutch
I3	Location based NbS-oriented SE	Mature	Founder	46	English
I4	Inter-landscape NbS network	Growth	Education	44	Dutch
I5	Inter-landscape NbS network	Starting	Founder	47	English
I6	Inter-landscape NbS network	Growth	CEO	46	Dutch
I7	Inter-landscape NbS network	Growth	Education	44	English
I8	local community engaged in NbS	Starting	Practitioner	44	English
I9	local community engaged in NbS	Growth	Practitioner	43	English

3.4 Data collection

Due to the richness of empirical data beyond the variables of interest, conducting a proper multiple-case study is dependent on data from multiple sources to strengthen the analysis (Yin, 2009). To construct a comprehensive answer to the research question, a mix of primary and secondary data was gathered, this is beneficial for data triangulation, which increases the validity and credibility of the research (Bell et al., 2018).

As the main and primary source of information, semi-structured interviews were conducted with the nine informants over the course of a four-month period to obtain data on

collective forms of NbS. the semi-structured intent of the interview was helpful in maintaining a grip on the underlying theoretical foundations while enabling interviewees to display their thoughts within the given parameters (Bell et al., 2018). An interview protocol (Appendix C) was established to guide the data collection process and was structured as follows: informants received a brief explanation of the background of the study with cautionary measures in place to limit social desirability and conformity bias. Then, consent was confirmed and the recording initiated. Following introductory questions on their role and organization, respondents were asked to describe their perceived importance of collaboration with regard to scaling. Additionally, their attitudes towards certain attributes such as the costs or innovativeness of collaboration were evoked. Finally, outcomes, barriers and enablers of collectives for NbS were pursued.

As the majority of participating informants occupied key positions such as entrepreneurial, executive, and practitioner roles, their evaluation is perceived as substantially significant. Such positions and inherent attributes make them particularly suitable to provide a detailed description of the status quo. During data collection, the Grounded Theory approach provides the capability to alter the interviewee template depending on both the relevance of the candidate and the analysis (Glaser & Strauss, 1967) and was, because of these specific positions, done accordingly.

All interviews and their respective durations are presented in Table 1. The duration of interviews lasted between 35 and 65 minutes with 46 minutes being the average length. The interviews were conducted and recorded through Zoom, Microsoft Teams, and by phone call. Subsequently, the recordings were transcribed verbatim within 24 hours making use of the tools Otter.ai and Mygoodtape.com. During the interview process, data saturation was closely monitored to ensure that the presence or absence of data was restricted and controlled. Nevertheless, due to the limited time and resources on the researcher's behalf, claims regarding saturation need to be interpreted with caution.

Supplementary to the interviews, secondary data was gathered from multiple sources. The types of documents utilized encompass publicly available documents such as company reports, non-governmental industry reports, news articles, and policy briefs. Prior to the interviews, information on the participating informants, the state of collectives, and the European NbS industry had been accumulated to start gaining an orientation with regard to the status quo of the subjects. The Grounded Theory approach prescribes an iterative process of going back and forth between cycles of data collection to develop an incremental understanding necessary for theory building (Glaser & Strauss, 1967; Bell et al.,

2018). Therefore, the collection of archival data was expanded by using the most recent and relevant reports from multiple credible institutions of which an overview is provided in Table 2 below.

Table 2. List of industry reports included in the analysis.

Archival source #	Institution	Title	Year
A1	UNDDR	Nature-based Solutions for Disaster Risk Reduction - Words into action	2021
A2	NN	The NetworkNature Semester on Nature-based solutions and Standards - Final Output Report	2022
A3	BCG & WBCSD	Cultivating farmer prosperity: Investing in regenerative agriculture	2023
A4	UNEP	State of Finance for Nature	2022
A5	WWF & South Pole	Common success factors for bankable nature-based solutions	2022
A6	UNEP	Nature-based Solutions: Opportunities and Challenges for Scaling Up	2022
A7	WWF	Nature Based Solutions –a review of current financing barriers and how to overcome these	2022
A8	IUCN	Enhancing the integration of governance in forest landscape restoration opportunities assessments	2022

*Full names of institutions disclosed in abbreviations

3.5 Methodological Limitations

Based on the chosen research design certain limitations need to be taken into account.

One initial concern in this multiple-case study, which follows a Grounded Theory approach, relates to the sampling strategy. Grounded Theory aims to develop theory from collected data by analyzing the experiences of participants (Charmaz, 2006). This non-probability sampling structure limits the generalizability of the findings to a wider population (Bell et al., 2018). However, as the aim of Grounded Theory is to generate theoretical constructs from the data collected, rather than generalizing to a larger population, this limitation is inconsequential.

Secondly, the integrity of snowball sampling is contested. As a convenience sampling strategy, it poses a risk when any lead traced provides candidates for interviews (Bell et al., 2018). However, the snowball process took effect after the initial theoretical sample already provided a quality threshold. This contextual similarity between the selected cases does

provide for moderate generalizations beyond the immediate research setting (Bell et al., 2018).

Furthermore, when dealing with qualitative data gathered from interviews, exposure to biases occur and needs to be mitigated. Three prevalent biases are considered and addressed. Firstly, social desirability bias is possible when informants may provide responses they believe align with preferable answers (Bell et al., 2018). To mitigate this, measures were taken to maintain participant confidentiality. Besides, limited context was provided during interviews to confine any expectations.

Second, there is a risk of confirmation bias. In this scenario, the researcher falsely validates a set of prior beliefs by selecting responses that are coherent with their worldview. However, because the data collection and analysis are tightly interwoven, the findings emerged directly from the data limiting the possibility to confirm preconceived ideas.

Thirdly, due to a relatively small sample size, availability bias can lead to difficulties in generalizing findings beyond the study's context (Schwarz et al., 1991). Therefore, efforts were maximized to substantiate the explanation of phenomena with multiple examples.

Lastly, to strengthen internal validity, reliability, and credibility, semi-structured interviews with neutrally formulated questions were conducted, ensuring consistency in the information gathered while also enabling open-ended responses that captured relevant constructs. Additionally, triangulation was employed by cross-referencing primary data from interviews with secondary data from the literature and document analysis.

3.6 Ethical considerations

This brief section elaborates on three ethical considerations that require acknowledgement. Firstly, this research was commissioned by the BWL initiative. While being affiliated with the consortium, it is important to notify that research was conducted independently and no outcome-related requirements were placed on the researcher prior to, or during the execution. Secondly, as institutional voids can be considered delicate environments due to their inherent association with inequality, caution was taken by the researcher to prevent the outcome from having deteriorating effects for those located within these voids. Finally, based on the research design, it is not feasible to guarantee the anonymity of the informants. Anonymity requires the researcher to be unaware of the respondents' identities as well. This was not the case. Instead, confidentiality will be upheld by modifying names, and organizational details, while preventing the tracing of information to the participants (Wiles et al., 2008). Prior to

participating in the interview, interviewees received an informed consent form explaining the research objectives, their rights, and the option to request a transcript of the interview accompanied by the potential quotation presented in the thesis.

3.7 Analysis

The distinctive principles of a grounded theory approach pertain specifically to the analysis and inherent theory formulation (Eisenhardt, 1989). From this stage onward, iteratively focussing on similarities, differences and patterns between and within the cases and the archival data will lead to the gradual inductive process that grounds the novel theory in the supporting evidence. As the analysis is dependent on the researcher's capabilities regarding the sense-making of relatively novel social phenomena it is important to highlight an interpretive stance is taking for the remainder of this thesis (Bell et al., 2018). Adopting an interpretive approach not only serves to translate and connect the empirically gathered worldviews into the topics associated with the research question, additionally, it guides the formation of concepts that follow out of these accumulations of data.

The first step of the analysis entailed uploading all transcribed materials onto Atlas.ti 22, a quantitative data analysis tool. Subsequently, without any further action, the excerpts were read a number of times thoroughly in order to get familiarized with the data, creating an understanding foundation from which theory can emerge. To organize the raw data into constructs, the method provided by Gioia et al., (2013) is advised to apply a systematic and rigorous approach to coding the qualitative data. Initial coding, similar to open coding (Strauss & Corbin, 1998), followed a line-by-line procedure conducted to descriptively label phrases, sentences or paragraphs in the transcripts that encompassed main ideas, topics or potentially relevant themes. This process initially yielded 143 original labels. The aim of this step is to stay as close to the data as possible (Charmaz, 2006). However, when the textual content deviated substantially from the focal research topics, line-by-line coding was temporarily omitted.

Secondly, following a process of axial coding (Strauss & Corbin, 1998), the familiarity with the data enabled a deeper understanding of the dynamics that allowed the researcher to group and organize the initial codes into more abstracted collections that represented higher-level concepts, phenomena, similarities or differences which are named 2nd order themes (Gioia et al., 2013). As the process matured all transcripts were evaluated, significantly duplicate codes were merged, and the iterative refinement led to the construction

of 64 1st order codes and 15 2nd order themes (Fig. 1). The final layer of abstraction, called aggregate dimensions, captures the emergence of the most distinct patterns retrieved from the data through the merging of 2nd order themes (Gioia et al., 2013). Together these three segments jointly comprise the data structure that displays the rigor in the researchers handling of the data.

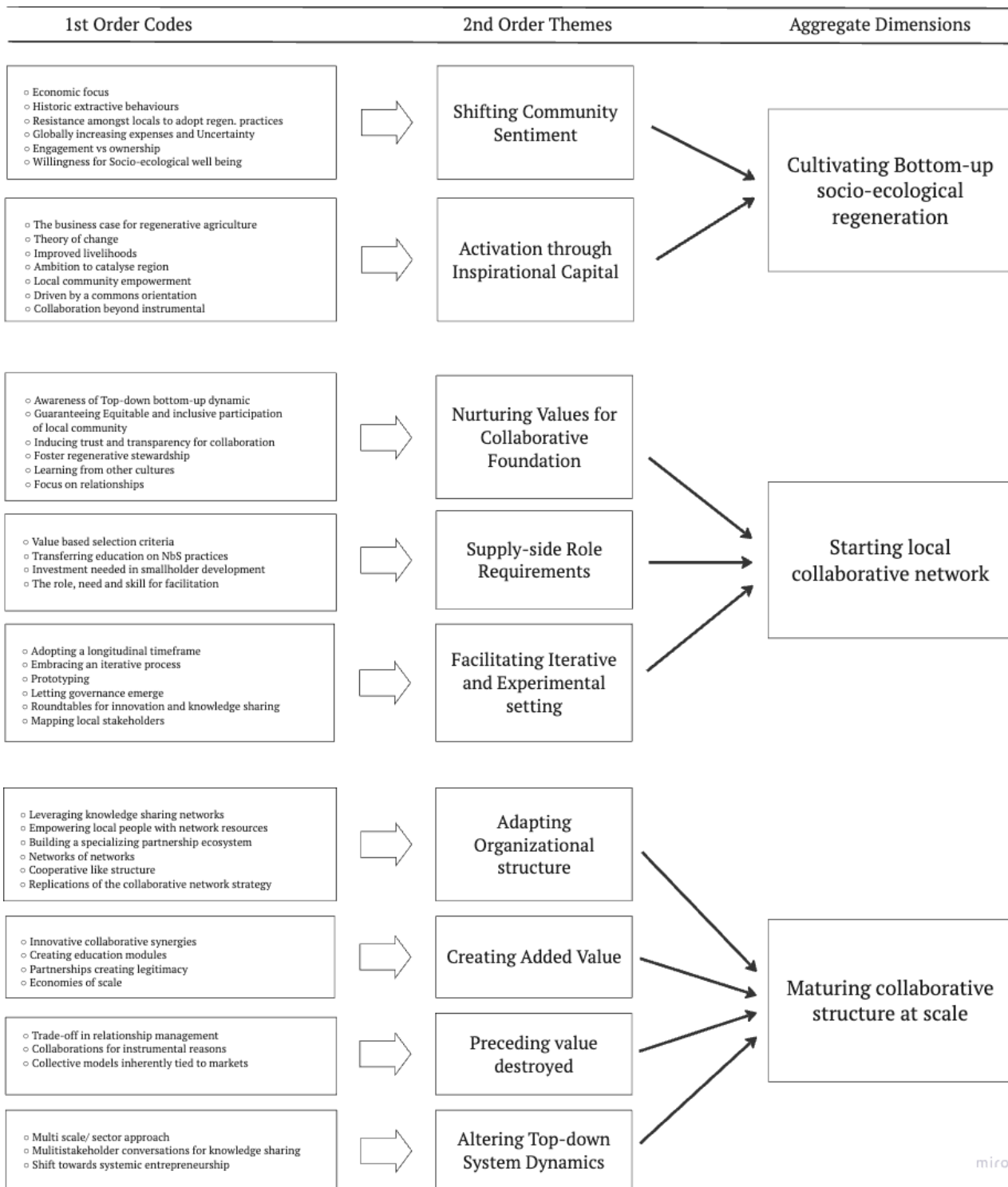
To elaborate on the revisions in the data, 1st order codes were restructured and merged if the properties they captured illustrated significant overlap. This was for example the case with the labels ‘advocating against misalignment in private funding returns’, ‘Influencing market mechanisms towards commons’ and ‘bridging market-orientation towards ecological restoration’ which got merged under the latter label. As an additional step, the combined frequencies of codes that resulted in the 2nd order themes were merged in Table 3, to gain an improved sense of relevance per theme.

Codes were organized into categories based on their relevance to attributes at the same hierarchical level, aligning with both the scaling features of NbS and the organizational structure within collectives. This resulted for example in themes such ‘values for collaborative foundation’ and ‘Supply-side role requirements’. Without a former conceptualization of these hierarchies, these two themes captured moments where there was an interaction between a CSE and a landscape. Therefore, the final level of abstraction was initiated by assessing which themes roughly occurred where on the scaling pathway of NbS. Finally, this resulted predominantly in a separation of CSE stages accompanied by its respective scaling constraints that led to the formation of the model and the theory presented in the following section.

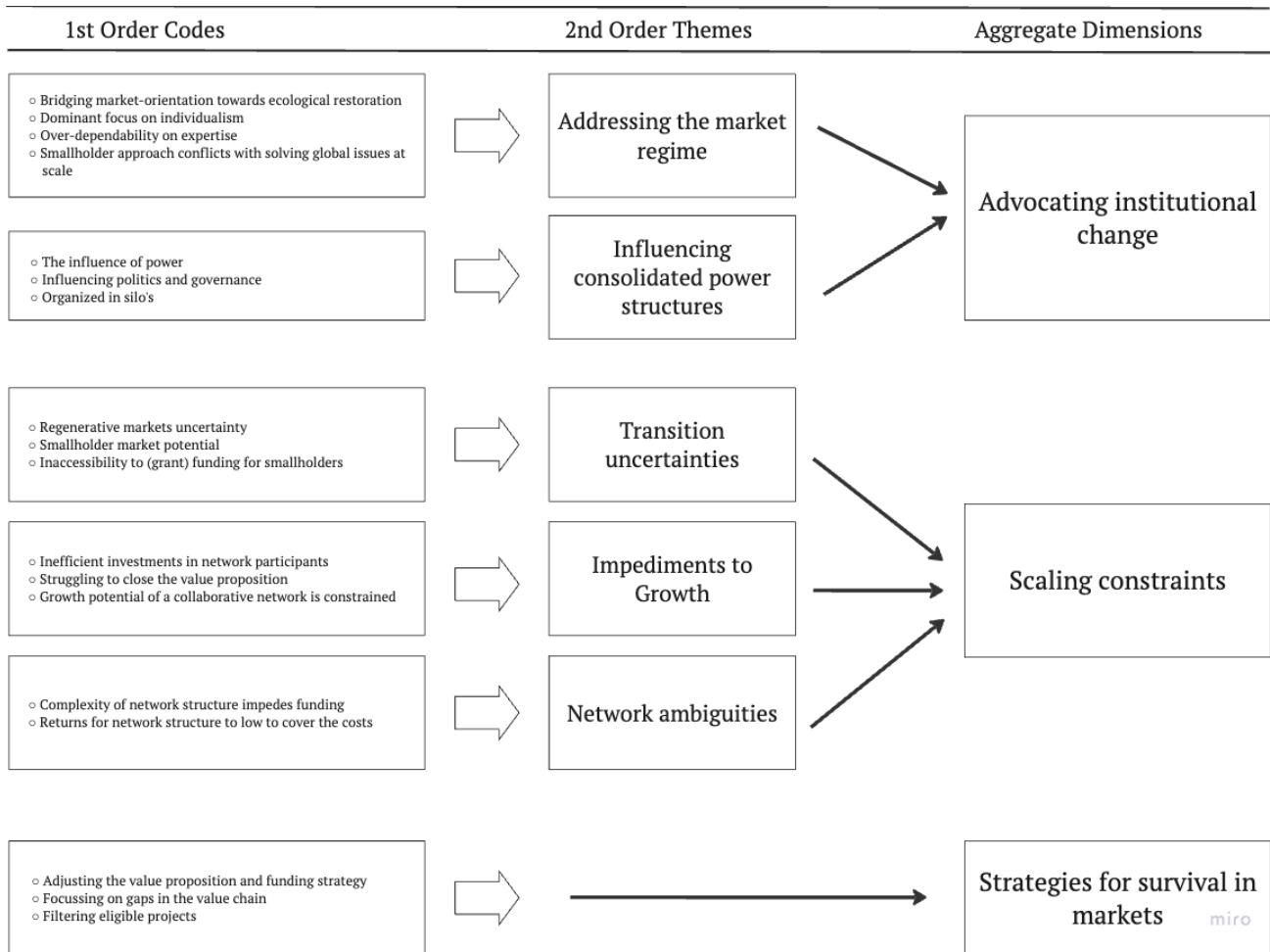
Table 3. Insights in theme concentration.

	Theme Name	Times mentioned in total	Mentioned by how many participants
1	Shifting Community Sentiment	30	7
2	Activation through Inspirational Capital	44	8
3	Nurturing Values for Collaborative Foundation	47	8
4	Supply-side role requirements	15	6
5	Facilitating Iterative and Experimental Setting	29	8
6	Adapting Organizational Structure	39	6
7	Creating Added Value	19	7
8	Preceding Value Destroyed	7	4
9	Altering Top-down System Dynamics	19	7
10	Addressing the Market Regime	35	7
11	Influencing Consolidated Power Structures	22	8
12	Transition Uncertainties	17	6
13	Impediments to Growth	21	8
14	Network Ambiguities	3	3
15	Strategies for Survival in Markets	32	8

Fig 1. Coding structure.



miro



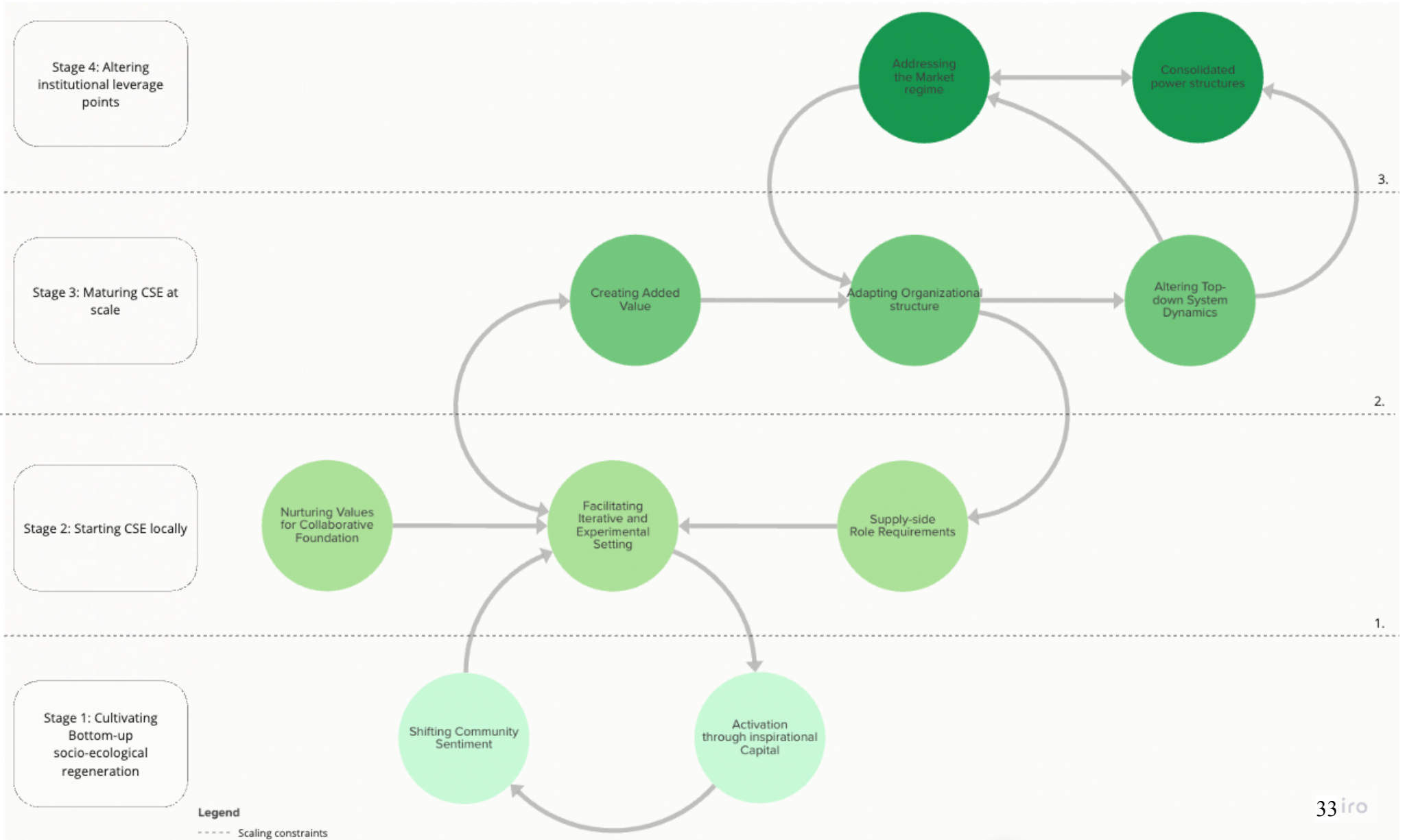
4. Findings

Deviating slightly from a common Grounded Theory approach, which typically presents findings by describing the uncovered data within individual aggregate dimensions, this study adopts a distinct yet organized approach. While maintaining the descriptive structure for each aggregate dimension and its associated themes, an overarching framework has been designed. This framework places each dimension and its coherent themes within a hierarchical context (Fig. 2.). The author's interpretation of the data represents the CSE interactions between NbS actors located at four chronologically varying stages of scaling up.

These four growth stages correspond with the top four aggregate dimensions as depicted in Fig. 1. The development of NbS originates in stage one and follows a trajectory towards becoming an established industry in stage four (Fig. 2).

Besides the four hierarchical stages, the model is comprised of three boundary crossing cycles (Fig. 2). Each cycle is interrupted by a dotted line that represents the present scaling constraints NbS faces when attempted to scale to the subsequent stage. However, these cycles display how CSE between actors positioned across stages can enable the NbS to overcome its barriers. Essentially, all cycles are concerned with reinforcing the cultivation of bottom-up socio-ecological regeneration as such an iterative process is suggested to approach the maximization of social value. With this goal in mind, the framework can serve as a tool for determining the position of ecosystem participants and assist in improving the landscape-based collaborative dynamics. In the following section, these stages, cycles, and their interactions are explained, substantiated and supplemented with additional archival data.

Fig. 2. Representation of CSE dynamics within the landscape-based NbS industry.



Stage 1: Cultivating Bottom-up Socio-ecological Regeneration

To initiate the implementation of NbS in an integrated manner, the activation of bottom-up socio-ecological regeneration results from shifting community sentiment through the influence of inspirational capital. Getting the local communities onboard to adopt NbS can be challenging as each landscape poses its contextual differences (I1; I3; I4; I9). In acknowledging these contexts one respondent mentioned ‘It is a cultural process as well, you know’ (I3), indicating that preconceived ideas on how to pivot ecological deterioration do not follow a one size fits all approach (I6; I9). Even though ‘it’s always been actually quite clear what needs to be done with the land’ (I1) and there are known interventions such as water retention, soil revitalization and carbon sequestration, that to a certain extent are homogeneous practices, at the root of the structure is a socio-ecological foundation (I1; I2; I3; I4; I6; I9). As the dynamic implies, this relationship between the natives and their landscape forms the pinnacle of the regeneration pathway (I6).

4.1.1. Shifting Community Sentiment

There are multiple reasons why communities can be initially hesitant to implement NbS. Farmer practices and community products and services are inherently historical cultural processes (I4; I5; I9). Attempting to discourage these by suggesting NbS methods can quickly be perceived as intrusive (I4; I5; I7). One respondent illustrated there is caution required to prevent the reproduction of historic extractive behaviours by ‘going out to marginalized people and saying, hey, we’re going to include you.’ (I5). A similar sentiment of resistance is additionally applicable to many communities that have seen diminishing returns and increasing labour due to the neo-liberal developments that occurred over the past decades (I3). In trying to uphold the pace of required production levels, incremental dept and soil degradation is holding these farmers captive in a disadvantaged position (Herenboeren, not published). Subsequently, macro shifts such as the Covid-19 pandemic, geo-political tensions and environmental decay triggered global inflation, resulting in higher expenses and rising uncertainty (I4). This accumulates to a scenario of scepticism with regard to unfamiliar approaches that pose additional risks. However, these communities simultaneously experience the deterioration of ecosystem services, uncertainty to the regular farmers and their crops as well’ (I8), which potentially threatens their survival (I3; I6; I8). It is this willingness for a more secure future that opens up a window of opportunity for NbS.

4.1.2. Activation through inspirational Capital

As the second largest theme retrieved from the data, activating through inspirational capital is widely mentioned to be of key influence in creating a collective vehicle for NbS. Derived from Table 2, the second-order theme encaptures 44 quotes mentioned by 8 interviewees who elaborated on its importance. Inspirational Capital captures the cultivation of hope and purpose by shaping a common goal orientation for the landscape.

“By showing examples. By inspiring. And that inspiration leads to action. And then we are there to support that” (Informant 6).

By supplying landscapes with successful case studies that underpin the financial viability and the long-term sustainability of NbS, such as regenerative agriculture, an alternative pathway is posed to their current routines of depletion. A list with examples is provided in Appendix D. Besides showcasing these examples, introducing transitioning strategies such as a Theory of Change enables these communities to envision an elaborate step-by-step process towards improved livelihoods (I4; I5). One such programme mentioned is a ‘franchise system for young local entrepreneurs opening their own canteen’ (I3). Findings indicate that when community members witness such advantages personally, they are motivated to replicate such initiatives (A1). Significant importance here is focussed on community empowerment. Going further than engagement, when the fruits of their labour shall return to the natives, it is mentioned that ownership develops a reinforcing cycle of ambition, initiative and agency that can swiftly remodel community sentiment into the building blocks for cultivating bottom-up socio-ecological regeneration (I6; A2). For example, ‘Habiba started with one, now regenerative, farm and because of that example there are now 70 farmers who have learned how’ (I6). Highlighting the momentum these illustrations can generate, activation through inspirational capital is perceived as the enabler in shifting community sentiment.

4.1.3. Scaling constraint one: Transition uncertainties

The transition uncertainties depict the initial theme within the aggregate dimension scaling constraints (Fig. 1.). In contrast to a solely encouraging narrative, transition uncertainties obstruct the implementation of NbS for many willing communities. NbS are far from being

commonly applied practices. Additionally, it is mentioned the majority of agricultural enterprises are smallholders that have limited resources (I6; I8). The smallholders willing to initiate a transition face the underdevelopment of investment channels and market mechanisms (I1). Admittedly, parties that do provide funding predominantly support actors with a larger production potential (I1; I7). This is for example the case for Informant 7 who preferably cooperates with communities that have ‘an impact ambition for landscapes to be up to a million hectares in size’, which supports the notion of discrepancy between the market and the NbS initiative.

Furthermore, amongst the ongoing initiatives, few have reached a stage where their novel operations can validate the promises of these methods, hence the continued uncertainty (I1; I6; I9). However, a recent report published by BCG and WBCSD (2023), does indicate increased profitability of up to 25% for regenerative agricultural practices (A3). This is additionally supported by a case in the Netherlands where a farmer shifted from producing low-value animal feed to regenerative crops, thereby increasing his profit margin seven times (I6). In both these cases prices are considered to compete on the regular market without any premium for differentiated production methods. Nevertheless, upfront investment and anticipated downtime impose a heavy weight on transitioning (A4; A5). Therefore, many communities are dependent on outside help to overcome these barriers. This is moment where the actors in stage 2 get involved and can simultaneously be perceived as the starting point of CSE.

Stage 2: Starting collaborative social entrepreneurship locally

In this second stage, the starting of CSE locally, an intermediary experimental platform is created that mediates the exchange of knowledge and innovation between the involved stakeholders in a single landscape. The facilitation of an iterative and experimental setting closes the first cycle of scaling NbS. By providing access to the tools for overcoming initial transition uncertainties, a positive feedback loop is initiated that will explained in this section. The successful functioning of this initial cycle is both dependent on values for a collaborative foundation that need to be nurtured, while supply-side role requirements capture the provision of the required resources.

4.2.1 Inducing values for collaborative foundation

Being the largest theme in the dataset, nurturing values for collaborative foundations appears to both encompass the caution and potential of CSE for NbS. Values need to be implemented to safeguard an equitable and inclusive participation of the local community and the landscapes' stakeholders (I4; I5; I7).

“Can we engage people in a way that feels really meaningful to them and is aligned with their purpose and their interests but at the same time, emphasize that we have a collective calling?” (Informant 5).

With awareness of skewed power dynamics, the prospect of being on the receiving end of resources provided by unfamiliar entities is perceived as value-laden (I5, I7, I8; A6).

“It must be the people who live in those areas that must be owners. They need to understand what they can do. They should be able to learn how their behaviour has an effect on the ecosystem and then move towards that regenerative economy.” (Informant 6).

A failure to acknowledge this dynamic can compromise the shift towards bottom-up regeneration by proliferating the unidimensional direction of aid (I5; I6).

To overcome this, it is repeatedly argued by the interviewees that relationship-building through deep listening should precede any efforts to implement change (I3; I4; I5; I9). The issues that are aimed to be resolved are complex and multiple different truths are valid through each stakeholder's perspective (I5; A6). Moreover, evidence supports that indigenous and natives are more effective in the caretaking of their ecosystems than other interventionists (I5; A6). Therefore, mutual trust and transparency must emerge as the groundwork for collaboration as it increases the likelihood of successful collaboration (I1; I9).

Lastly, a relative outlier within this theme is fostering regenerative stewardship. This is posed by interviewees I6, I7 and I8 as a prerequisite for collaboration and is perceived to produce significant cost reductions. Through regenerative stewardship it is expected that the initial recipients of any form of support will direct their efforts to spread the non-excludable share of these resources to their peers, both increasing the pace of the transition through the activation of human capital while reducing the need for constant mediation and therefore the costs. An example of this is found in Guatemala, where the area surrounding 160 villages is currently undergoing a greening process. They are eliminating slash-and-burn agriculture and

replacing it with agroforestry. No one else is needed for this task, the villagers and farmers are doing it themselves (I6). Here, the process of scaling up NbS is accelerated by not purposely keeping learnings for individual gain but by expanding through spillovers gained from fostering values for a collaborative foundation. As a result, their demand for finance is reduced as the spreading activation yields increased efficiency and economies of scale.

4.2.2. *Supply-side role requirements*

This step determines the instrumental and quantifiable exchange of goods and services. In contrast to the values of a landscape which are standardized, supply-side role requirements are determined dynamically to be adapted to the spatial and temporal scales of a landscape. Spatial diversity requires the education on NbS to be tailored to its landscape-specific context (I4; I6; I7). Therefore it is likely that a starting collective focuses on a single landscape or specialized ecosystem (I1; I2; I3; I8; I9). An example is informant I7 which throughout its emergence predominantly focuses on distributing knowledge for restoring peatlands. Besides delivering adequate knowledge, this exchange additionally requires the need, role and skill for facilitation, which is intensive on human resources (I3; I4; I6; A5; A7). This role was clearly elaborated on: ‘we perceive ourselves as the party between the landscapes and the larger systemic processes’ (I4), and ‘my learning there is that it needs facilitation, it’s not working in itself’ (I3).

As landscapes develop over time, either a decreased dependability or subsequent need for assistance can occur which is why this segment is dubbed dynamic. To illustrate, the Altiplano experimental setting is relatively autonomously operating after an initial resource infusion, even sharing its volunteers with neighbouring farms (I4). By contrast, a drought-struck conflict area such as Jordan is dependent on the last remaining groundwater, positioned at 2 km deep and estimated to last a maximum of 7 years (I6). Logically, such a case is more dependent on continuous involvement.

This same dynamic dependability is extended to a landscape's financial requirements. The actual availability and provision of funding remains remarkably limited in the industry (A4; A5; A7; A8). This is due to high upfront costs, long lead times, small project size and the risk they pose. However, bundling finance through a landscape approach is perceived as a potential enabler as both the larger physical area and investment size are more attractive to investors (A5). Nevertheless, even collaborating landscape partners rigidly attempt to limit the financial aid they provide: ‘Before you know it, you are positioned in a

funding-dependent relationship' (I6). Instead, they insist on facilitating persistence and entrepreneurialism as a service to increase the likelihood of successful experimentation.

4.2.3. Facilitating an iterative and Experimental setting

With the values and resources in place for collaboration, the facilitation of an iterative and experimental setting serves as a platform where community initiatives intersect the offerings of CSE initiatives. Among the participants, I2, I3, I4, I6; and I9 explicitly mentioned the facilitation of this setting to be a preferred method for innovatively resolving challenges. Names that were used to describe such a setting included 'labs', 'roundtables', 'oases', 'hubs' and 'prototyping'. These spaces are not solely focused on inducing ecological improvements to the landscape, yet also function as a platform for all involved stakeholders. Building forth on the induced values for collaborations, there needs to be an emphasis on mapping and inviting stakeholders to guide the pathway for innovation (I3; I4; I5; I7). On the power of the roundtable, an informant mentioned it attracted 'about 70 people from the village. Farmers, customers, politicians' and 'by holding things in a democratic way', 'magic happens' (I3). Essentially, it is 'about learning collectively from what is happening in a system' (I2). Additional examples of experiments are illustrated in Appendix E. However, the intent is best summarized by the following:

"But just let it happen. In every local culture, in every local biome. There is perhaps another way to achieve than one strict model. Ultimately, it is about ecological function. So that water stays in the ground, that vegetation is there and biodiversity is increasing" (Informant 6).

As products, services, new knowledge or practices iteratively emerge, these developments feed back into the Inspirational capital of the involved parties which in turn benefits the shift in community sentiment. This empowerment increases the likelihood of wider participation, defining the iterative process of the first cycle. Additionally, it is advised to let governance emerge similarly rather than predetermine an ownership structure as 'initiatives have a tendency to become too quickly too formal' (I2). As local experiments succeed they enable a gateway to an eventual stage of autonomous value creation.

Nevertheless, Besides success, failure is also inherently connected to experimenting. Especially when working with nature, outcomes remain unpredictable and deductions often work better than inductive reasoning (I2). Apart from the contextual nature of landscapes,

most prototyping is based on longitudinal timeframes and reiterations in the case of failure (I2; I4; I6; I8; A8). This aspect predominantly explains the resource intensity and the current absence of data-backed interventions. However, successful prototyping has been a proven strategy to reduce replication time (A5). Suggesting that the potential outputs collectively created in this setting improve the scalable prospects of NbS.

4.2.4 Scaling constraint two: Impediments to Growth

Again, the presented combinations of activities in stage two of the model project the opportunities for NbS enabled through CSE. However, when the combination of inputs in a starting CSE initiative fails to generate sufficient value, the initiative is unlikely to independently reach the third stage. The reasons interviewees report include that: performed investments in network participants were inefficient, difficulty existed in closing the value proposition, and that the growth of a local collaborative network is constrained (I1; I3; I8; I9). Logically, a starting collective is not likely to possess an abundance of resources. This also applies to the number of beneficiaries that participate in the experimental setting (I1; I3). When resources are spent in an ineffective manner, the viability of the whole is at risk and trade-offs need to be made (I1; I5; I7). As illustrated by informant one: ‘the bet was that these single companies along the value chain are strengthened by our investments, and then become more profitable over time’ however, they concluded ‘it’s too slow’. For multiple initiatives, this means choosing in which relationships to engage, and which ones to abandon or loosen (I1; I3; I6). As a result, the growth potential of the local network is impeded.

“Because I think growth also has to be something about how many relationships can you handle?” (Informant 3).

In overcoming these barriers, interviewees reported revisions of the value proposition as necessary (I1; I3; I5; I8; I9). Predominantly, introducing selection criteria for filtering eligible projects is strongly appointed as means for survival (I1; I6; I7). For example, after failure, Informant 1 mentioned that ‘with our growing expertise, we actually know where gaps in the value chain are in the region’, indicating a restructuring in operations. If these reinforcements yield successful outputs, the creation of additional value supports a CSE initiative’s autonomy. Alternatively, support from actors in stage three will be needed to pursue the viability of an initiative.

Stage 3: Maturing CSE at scale

The most important difference between the previous stages and maturing a CSE at scale is the shift in the scope of operations. In stages one and two the scaling of NbS is thoroughly interwoven with the objective of creating thriving socio-ecological dynamics for a single landscape through CSE mechanisms. In the third stage, the maturation of CSE aims to provide a backbone for scaling NbS in a variety of landscapes. Characterized by constant evolution, the additional value created in the landscapes influences the organizational structure by determining how the updated network can be leveraged as a strategy. After this readjustment in strategic position, a modified set of resources flows back into the experimental setting. Additionally in this stage, the development towards a sizeable network infrastructure creates the potential to address hampering institutions by altering top-down system dynamics.

4.3.1. Additional value created

Located at a critical position in the model, the additional value created supports both the landscape where it emerged in becoming autonomous while simultaneously indirectly enabling for example the replication of knowledge to other landscapes. Positive outcomes such as products, services, and approaches directly flow back into the experimental setting. As a result, an ecological improvement, a social benefit, or financial gain, increases the momentum again in the first cycle. Informant 1 mentioned working on a value chain for regenerative chickpeas. Having found a supplier for raw produce and local channels to distribute, value-adding activities in pretreatment enabled regional opportunities for upscaling. Similarly, the business case in Spain was strengthened as two successful experiments, regenerative almonds and olive oil, lowered market barriers by merging their efforts and becoming one supplier (I4). These examples underpin both the socio-ecological and financial prosperity NbS can have through reinforcing stage one and two activities.

Additionally, the created added value is often transferable into knowledge modules or innovative synergies that can be transferred and serve other landscapes (I3; I4; I6; I7; I9). Informant 3 illustrated the development of a produce collection infrastructure for organic farms in Nepali mountain villages. The farmers receive ‘a very good price for their product’, while the food is transferred into meals for schools and hospitals. At current, 1600 smallholders are included in this synergy. Over time these synergies pose additional benefits

through the creation of legitimacy and economies of scale (I1; I3), strengthening the bankability of labs while lowering the barrier for replication (I1; I6; A2; A6).

4.3.2. Adjusting Organizational Structure.

When the model's integrity is honoured and the added value created flows back into the experimental setting, regenerative stewardship then guides the dispersion of development amongst its fellows such that new ecosystems emerge. Following the principle of letting governance iteratively consolidate, a maturing CSE structure should strive towards reduced involvement in the region to allocate its resources toward incubating new projects by replicating the previous stages (I3; I4; I6; I7). For example, one informant stated 'we are only stimulating them to spread out themselves' (I4). By leveraging a network as a strategy, an abstraction process in the role of the maturing CSE occurs. This abstraction is noticeable for maturing initiatives that 'we still look at what exactly our role is so that we can have more impact in the landscapes without necessarily having to grow ourselves' and 'our role is above all to bring together the important stakeholders' (I4). At this stage, more reflections on one's role were common: 'We are a service provider for bringing parties and knowledge together', who operate 'close to the bottom' while others collaborate on 'governmental levels' and with 'the big players' (I6). Respondents emphasize becoming a 'network of networks' (I3; I4), that serves to provide the infrastructure for knowledge sharing and other resources between the individual landscapes (I5; I6; I7; I9).

By developing more specialized partnerships, the network can incrementally be leveraged to provide improved allocations based on the landscape's needs (I4; I6; I7). As a result, there is a potential for savings in human and financial capital (I4; I6). This function concludes the second cycle where the objective is to develop and progress an ecosystem of specialised partnerships among the participating entities of the CSE (I4; I5; I6). As every collective evolves differently, this multifacetedness in adopted responsibilities is further illustrated by a range of examples found in Appendix F. Nevertheless, even in developing ecosystems, the absence of landscape funding partners is a recurring element (A7).

4.3.4. Altering Top-down system dynamics

Prior to this section, the model served exclusively to describe the reinforcement of the two established cycles that boost the cultivation of bottom-up regeneration. These cycles are

positioned in the current paradigm and take into account the given conditions faced in the process of collectively scaling NbS. However, as the CSE matures, incremental leverage is gained by the intermediaries and with this traction comes an additional shift in their responsibilities. The third cycle extends the objective of scaling NbS through CSE by Altering Top-down System dynamics. This activity is described by Informant 2 as the process of ‘bending one silo to another so that they both see their interests represented’. A precondition here is the access to higher-level actors:

“We work with a few different networks. FAO has a finance practice and we have co-hosted that for the last three years. And that gives us access to people that are both at the local level on the ground, but also decision-makers, policymakers, etc.” (Informant 7).

Aiming to reduce the systemic barriers that uphold the status quo, the role of the ‘systemic entrepreneur’ is adopted by the CSE initiative (I5). In this arena, a network of multi-scale and multi-sector actors needs to be made aware of the impeding structures that hamper current development (I2; I3; I4; I5; I8).

“As NbS are inherently multi-disciplinary, multi-sector, and inter-ministerial, and wider stakeholder engagement processes are needed to build consensus and share information across sectors. The development of a shared vision, action plans, and targets can help strengthen acceptance of NbS as a way to meet objectives.” (A6, p. 21.).

By bringing together high-power entities from governmental, civil and market spheres and emphasising illustrations of well-functioning transitioned landscapes, a negotiation space for change is created (I1; I4; I6). The effects this could have on the total system are elaborated on in stage four.

4.3.5. Scaling constraint three: Network Ambiguities

Similar to the previous stages, a maturing CSE is confronted with two interrelated barriers that further obstruct the scaling trajectory of NbS. As mentioned by informants I1, I3 and I7, a stand-alone network structure often lacks sufficient tangibility with regard to their operations to secure adequate funding:

“I was searching for money for three years to finance that on a global scale because I really would love to bring that food network approach further. And it's super hard at the moment to find financing to organize exactly that.” (Informant 3).

Networking CSE report that funding is predominantly granted to feasible cases. However, in many cases, its feasibility is dependent on the infrastructure the CSE network provides. As the CSE evolves and expands it becomes increasingly complex to cover the operational costs of maintaining relationships with diverse stakeholders while coordinating activities (I2; I7). This ambiguity discourages investors in their decision-making process. This is extended to the second barrier, which is directly related to the absence of funding. Namely, the returns received by the network are often insufficient to cover the expenses (I1; A7). In the quest to maintain operational, ‘We are also having this internal question at the moment around where is our limit to our support and services?’ (I7).

With the longitudinal timeframes necessary for NbS to come to fruition they pose a risk to their own scaling prospects. Furthermore, through the continuous adaption of the organizational structure, it remains challenging to eliminate isomorphic activities coherent with stage two activities. The matured CSE networks that are better able to omit this barrier report to rely on institutional or philanthropic funding sources (I4; I6; I7).

Stage 4: Advocating institutional change

Briefly elaborated on in the previous section, the last cycle is focused on inducing change to the manifested institutions. In the model, two domains are considered to uphold disparities that prevent landscapes from scaling up NbS more rapidly, consolidated power structures and the market regime. Essentially, this cycle is concerned with addressing the absence of funding available for the landscapes from the perspective of the provisioners. Utilizing the elaborate structure of a maturing CSE, an alternative narrative can be demonstrated to expand the knowledge of those in the position to nudge the system most effectively.

4.4.1. Influencing consolidated power structures

In their functioning, powerful entities on a national or global scale often contradict the facilitation of NbS. In this section term consolidated power structures includes, but is not limited to institutional investors, industry giants and governmental entities. These stakeholders generally operate based on manifested beliefs and routines, which are accompanied by organizational silos (I2; I5; A6; A1). For example, Informant 2 emphasizes

the constant need to present ecosystem restoration methods to separate government officials responsible for different environmental properties. However, this fragmented approach overlooks the interconnectedness and cumulative impact of ecological restoration efforts. This is further supported in the following quote:

“Although the design of NbS often recognises the importance of all of these elements, in practice scaling up has been restricted by siloed policies and programs, a lack of sufficient and long-term finance, inadequate technical capacity and a lack of confidence in their economic, social, and environmental integrity” (A6, p. 22.).

For approaches as integrated as NbS, this fragmentation and latency pose significant limitations in attempting to gain both legitimacy and funding.

A second inconsistency is an ongoing polarisation regarding environmental interventions such as NbS. During a conference discussing the potential benefits of regenerative agriculture, Informant 6 observed a sceptical conservative party in the Netherlands causing disruptions. Their actions undermined the efforts aimed at promoting sustainable practices. In contrast, when the director of a venture capital fund presented how transitioning from animal feed to poly-culture crops resulted in a cost increase from 2000 to 23000 euros per hectare, but was accompanied by a substantial rise in revenue from 3000 to 30,000 euros, this logically generated significant interest. Although this subsequent interest enables a window of opportunity, this default behaviour illustrates the deep-rooted beliefs that currently hinder development.

However, despite the resistance and fragmentation, the potential exists for collaboration and policy interventions that can align these influential entities with the principles and benefits of NbS. It is estimated by the World Economic Forum (2020) that nature-positive policies could attract more than US\$10 trillion in new annual business value and create 395 million jobs by 2030 (A4). Such policies could resemble the approach the Guatemalan government is taking, mandating social entities, such as schools and hospitals, to procure goods from 8500 smallholder farmers (I3). As the business cases on the viability of NbS projects accumulate, increased interaction with actors positioned at other levels is required to emphasize the viability of bottom-up operationalization.

4.4.2. Addressing the market regime

Similar default scepticism is present in the market structure and poses impediments to the funding for NbS. As earlier mentioned, the dominant logic in the market holds preferable attitudes toward large-scale projects. According to their perception, the commons orientation conflicts with solving problems at scale (I3). Currently, less than 10% of the funding granted to climate solutions is oriented toward local development (A6). The actual fraction of that invested in initiatives that are led by local communities is insignificant. Besides the small project size, investors mention the absence of monitoring and evaluation, high upfront costs, and long lead times as impediments to their decision (A5; A2). These funders advocate a traditional standpoint on (social) entrepreneurship focusing on a single organization that needs to be responsible for the largest proportion of change possible (I5; I7). Along that pathway intellectual property is chased and the allocation of expertise determines the projects that get scaled up. In this industry, that places an overdependence on expertise (I6; I7), which is accompanied by an overdependence on the SE as an intermediary necessary for growth.

“The point is, if we still want to save the earth in time. Then we have to turn away from that group of experts. Because there are too few of them.” (Informant 6).

Taking into account the often resource-deprived position of beneficiaries, expertise cannot be too technical or resource-intensive in order for it to be correctly integrated (I6; I7). These conflicting perspectives between financiers and NbS appear difficult to align. However, throughout this chapter, the scalability and transferability of well-designed bottom-up socio-ecological regeneration processes such as 1600 smallholders in Nepal (I3) and 160 villages in Guatemala (I6) display the alternative scenarios possible. By amplifying these business cases there is a prominent role for maturing CSE initiatives to function as an intermediary in advocating and enabling access to transitional finance in order to improve the scaling prospects of NbS.

To sum up this extensive chapter, scaling NbS through CSE is comprised of three cycles in which the CSE initiative functions as an intermediary for inducing change both to the beneficiaries and to those in positions of power. The development of NbS originates in stage one and follows a trajectory towards becoming an established industry in stage four (Fig. 2). Ultimately, the goal for the CSE structure is to become an ecosystem of specializing partnerships positioned across stages so that collaborations enable the NbS to overcome its stage dependent scaling barriers. Essentially, all cycles are concerned with reinforcing the cultivation of bottom-up socio-ecological regeneration in order to support communities in

becoming autonomously organized landscapes. In this pursuit, the framework can serve both as a tool to position ecosystem participants and evaluate their activities, while additionally providing insights into which collaborations need to be strengthened.

An additional layer of abstraction is presented in Figure 3 to emphasize this. Essentially, the function of CSE is similar towards both ends of the system. However, their respective approaches follow contrasting directions. For the bottom half the emphasis lies on beliefs that need to be nourished in the landscapes so that routines get implemented which increase their autonomy and therefore their power. By contrast, mechanisms of power can be influenced by elaborating on illustrative routines that alter their beliefs on the feasibility of NbS.

Both sides engage in the processes of unlearning and learning. The unlearning reconsiders what previously was assumed to be true, while learning through the meso-level intermediary can narrow the gap between the micro and the macro levels. Finally, the process of knowledge-sharing is posed as one of the most significant findings. Because of the chosen data structure and the presence of knowledge-sharing in every cycle of the model, the topic was not labelled as a theme separately. Nevertheless, eight of the participants mentioned its utility, while additionally, it appeared in all of the secondary reports.

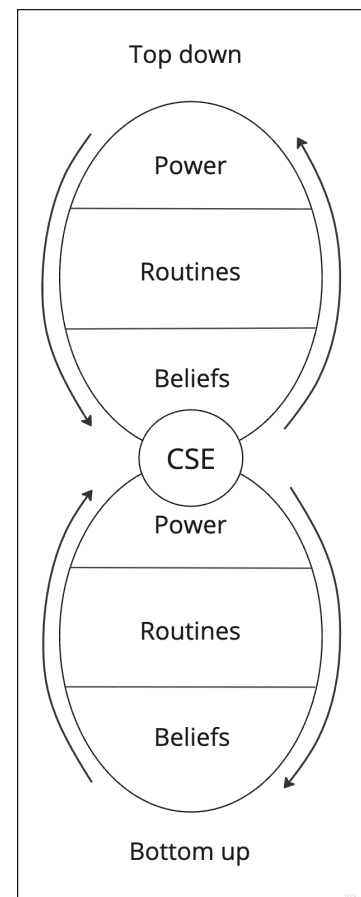


Fig. 3. The functioning of CSE.
Inspired by Mumford, (2002).

5. Discussion

The aim of this thesis was to pursue the influence of Collective Social Entrepreneurship on scaling Nature-based Solutions. Special attention was directed towards the mechanisms present at the collective level and the incorporation of larger planning processes for NbS. The findings suggest that the collective scaling of NbS represents a vehicle that is dependent on collaboration at four hierarchical levels where the initial stage, the cultivation of bottom-up socio-ecological regeneration, can be continuously reinforced if the overarching mechanisms in the higher levels can suffice in adapting to their stage dependent responsibilities. Opposed to scaling individually, a hierarchy transcending CSE structure can aid in providing the means necessary to alleviate barriers which otherwise limit the NbS's growth potential. However, as this vehicle is poised with resource constraints throughout each level of development, the viability of the CSE cannot be guaranteed and requires continuous optimization that in itself is posed with impediments. The section below will debate some of the most significant insights.

5.1.1 Avoiding business as usual through inadequate NbS implementation

Without collective mechanisms that foster institutional reform, the socio-ecological regeneration of the landscapes and their participants is at stake as their inaccessibility to funding remains predominantly dependent on investment size. As a consequence, there is a danger of the proliferation of the current scenario of 'business as usual' accompanied by the risk of exploitative behaviours (Melanidis et al., 2022). With the majority of NbS initiatives being labelled as 'small-scale', preferential treatment of large-scale projects is likely to result in band-aid solutions that omit the intertwined socio-ecological structure at the roots of global landscapes. Due to the perceived profitability of landscape restoration after a longitudinal transitional trajectory, solely collaborating with larger partners equals a limited redistribution of the returns. The subsequent investments would then follow a similar logic which ultimately poses the risk of generating merely a few established regenerative industries. Although this scenario likely entails the rapid scaling of ecologically improved practises globally, the author argues that following this scaling pathway entails counterproductive outcomes with regard to maximizing social value as this would merely entail an extension of the neoliberal paradigm.

Continuing this logic, small-holders that eventually would qualify for investment due to the rising threat in food security receive unidimensionally and top-down designed interventions focussing mainly on scaling natural properties that disregard the contextual and empowering aspects of NbS. A subsequent centralized structure for logistics and infrastructure reduces the potential for local autonomy and ownership that could otherwise emerge. Instead, such an approach presumably prolongs the attitudes regarding captivity at the bottom of the pyramid. As a result, the designed model in this study is aborted and systems change would follow a gradual process based on physical events. Following the logic provided by Meadows (1999) on places to intervene when maximizing social impact, this scenario qualifies as least effective. However, some moderation needs to be placed on the validity of the above assumptions as large industrials do in fact report on improved livelihood roadmaps and smallholder inclusion (Sjauw-Koen-Fa et al., 2016). Although, questions are posed by the authors regarding both the integrity of their social and ecological soundness.

A second extreme scenario illustrates an even more dystopic outcome. The data implies that the typical properties of an institutional void were present in the landscapes. The sector is characterised by hampered market development and impeded market participation (Mair & Marti, 2009). If this gap remains unaddressed, the initial profitability for large-scale early adopters increases the barriers to market participation. Smallholders are then again outcompeted and unable to attract new finance. Risking similar food security constraints as in the above argument, their only option is to continue depleting their lands with traditional chemical pesticides and nitrogen supplements. As the majority of global farms are labelled smallholder, the opposite of systems change occurs and a lock-in on ecological degradation would impact the world's ecological and societal well-being. Therefore, there is a necessity to connect smallholders to markets by implementing NbS at the landscape level. In parallel to the literature provided by Marhdon et al. (2010), the findings suggest this connection is dependent on the interplay of political, social, economic, and cultural factors. In extension, scaling up then becomes the result of intentionally pursuing disruptions of manifested routines, beliefs, and power (Mumford, 2002).

5.1.2 Unlocking the Potential of Collective Social Entrepreneurship for Scaling Nature-based Solutions

When active CSE engagement is tailored to the landscape level, this study implies there is a potential for far-reaching effects resulting in an upward spiral that indeed pursues

the maximization of social value. By inducing bottom-up behavioural change by illustrating the viability of an autonomous business case for NbS, core beliefs are altered and actors can be inspired, incentivized and mobilized to adopt novel routines. As the beneficiaries start reaping the fruits of their labour and empowerment allows them to harvest personal rewards, an enhanced status quo is poised to trigger insights into the interconnectedness between their relationship with the landscape and aspects like risk reduction and well-being. This realization is amplified by the restoration of various ecosystem services such as food, water retention, and cooling. The continuation of such behaviour is supported by the numerous examples of regenerative stewardship where little interference from intermediaries is eventually required. Essentially, the data substantiates the notion that correctly designed NbS interventions can foster socio-ecological well-being as a result of humanly-induced behaviour (Cohen-Shacham et al., 2019). The depicted upward spiral in this scenario relates to a substantially more effective place to intervene in a system as the understanding of positive feedback loops potentially enables a shift in mindset that can alter the current paradigm (Meadows, 1999). However, faced with significant transitional difficulties these challenges necessitate a CSE approach to provide fundamental support.

Corresponding to the literature, the various methodologies applied significantly align with the typologies of Alvord et al. (2004). The CSE vehicle for NbS implementation followed the processes of building local capacity, disseminating a package of innovations, and building a movement. One apparent distinction in this study is that dissemination of an innovation package is strongly coupled with building local capacity as the experimental setting provided the platform through which value creation resulted from the beneficiaries themselves.

Extending on these innovations, because of the novelty and potential disruptiveness of the NbS field, successful collaborations and their additional value derived from the experimental setting pose the possibility for radical outcomes. Opposed to individual SE, the evidence suggests that CSE provided opportunities to better address social problems additionally in a more scalable way. As a result, the distance to the market can be bridged through an improved NbS supply that ignites a ripple effect on both the demand side and investment opportunities. Exemplary is the maturation of the Altiplano landscape that, through adequate support, has led to the emergence of local value chains. Therefore, it is argued that with attention to the larger planning processes, such as regional blueprints, the finance gap could be mitigated as investment size increases, risk-reduction is facilitated through bundling credit in bulk, and the spatial aspect is likely to strengthen quality and

efficiency. A critical argument can be made here on the increased spatial risk in the case of a disaster. However, this reasoning is negligible as a singular investment in a large-scale endeavour would be susceptible to the exact same risk. Therefore, the influence of CSE on the scaling of NbS appears to be highly relevant.

5.1.3 Viability Challenges for Collective Social Entrepreneurship in NbS Scaling

By contrast, the successful implementation and scaling of NbS cannot be guaranteed through larger regional planning processes and finance in bulk. A large part of the responsibility resides in the quality and capability of the CSE that in itself is faced with plenty of impediments endangering its viability. In essence, the collective level continues to be made up of a constellation of individual actors. The dependency on trading resources in a specialised ecosystem does pose a vulnerability to the CSE. The maintenance of relationships is resource intensive and accompanied by decisions on which particular functions to fulfil and which not. Foremost, due to the urgency and scale at which NbS needs to be deployed there cannot be an over-dependability on expertise. Extreme cases aside, common knowledge sharing on relatively simple ecological principles captures the main activity and needs to be as accessible as possible. This results in both a high chance of isomorphism and low proprietary and competitive properties. Although this accessibility contributes to the maximization of social value, the hybrid nature of CSE participants additionally stipulates a dependency on financial returns.

A final duality emerges as on the one hand such diversity and redundancy in available knowledge resonates with the contextual dynamics of starting a local and decentralized landscape approach empowered by just and equitable values. On the other hand, maintaining a multitude of dispersed learning channels produces an inefficient and costly industry burdened with a constant reinvention of the wheel. With the goal of scaling, whether to a different location or through the region following spillovers, some standardization needs to occur that aligns with the replicability, adaptability and transferability strategies of Weber et al., (2012). Similar to organizational theory, maturation is followed by a certain rigidity and formalization (Scott & Bruce, 1987). However, additional caution is required to omit the maximization of efficiency, risking to become an industry giant that loses contextuality. Therefore, it is essential that CSE focuses on value creation at the bottom so that its efficiency is derived from autonomous networks of networks.

Finally, it appears CSEs solely comprised of hybrid organizations might face difficulties in advocating institutional change. Although potentially this pursuit yields the further lowering of barriers with regards to implementing and scaling NbS, from a point of economic viability confrontations with power are resource intensive. Besides, the interplay with actors outside the SE realm requires a whole new set of adaptive capabilities. Therefore, it remains unlikely that CSE alone provides a silver bullet for scaling NbS. However, it is strongly argued in this study that CSE has the potential to occupy a genuinely valuable position in changing the rules, structure and goals of the system (Meadows, 1999). Ultimately, those are the changing dynamics required to radically improve socio-ecological value creation.

5.2 Theoretical contributions

To the furthest of the authors' knowledge, the present study is the first attempt to analyze the influence of CSE on NbS. As the extant literature on NbS dictates a principal role for human processes in its facilitation, as well as an openness to integrated approaches (Cohen-Shacham et al., 2019), adopting a CSE perspective provided rich insights that aid in the advancement of our knowledge of the operationalisation of NbS. Firstly, the findings demonstrated how leveraging the experimental setting as the centre of attention is suggested to create an upward NbS spiral. This effect is attributed to the activation of the communities at the grassroots. As shown by the findings and supported by the literature, NbS implementation is often obstructed by conflicting institutional, cultural or socio-economic factors (Nalau et al., 2018; Seddon, 2022). By focusing on the equitable and inclusive facilitation of this experimental setting, the dominant unidimensional direction of finance and governance is contested.

To elaborate, the findings imply that when power is concentrated at the bottom, social mechanisms such as regenerative stewardship and inspirational capital pose widespread activating capacities. These implications are critically positioned within the addressed gap as they are argued to indirectly reduce the need for finance through the mobilization of landscape participants. This latter part in itself contributes to the operationalization of NbS. While previously established that solely top-down approaches are likely to lack salience (Cash et al., 2006; Chatterjee et al., 2022), predominantly through the exclusion of locals' knowledge and voice in decision-making processes (McQuaid et al., 2021; (6 in Seddon), the insights in this study resonate with the literature through reasoning from the opposite direction. Although the NbS phenomenon is already considered a relatively bottom-up

movement (Seddon, Cohen), the presented findings and subsequent model accommodate the ‘how’ question through the displayed dynamics.

Additionally, it is debated why this appears to be an effective pathway. On the one hand, this empowerment provides farmers, which were historically held captive to a certain extent, with novel perspectives on future development. On the other hand, personally experiencing that these novel approaches have the potential to improve socio-ecological welfare reduces the scepticism that naturally occurs when it is suggested to abandon long-established cultural processes. In effect, this created openness to change could yield further advantages in an increasingly more challenging environment. There are early advocates reasoning that the implementation of NbS can lead to further spillovers in sustainable behaviour (Cárdenas et al., 2021). A similar notion is made in this research.

Finally, it is presumed the experimental setting contributes to alleviating the presented structural barriers. Previous scholars addressed the absence of adequate measuring tools and metrics and the associated uncertainty risks that impede finance for NbS (McQuid;Cohen; Raymond). Additionally, in the adjacent field of climate risk reduction, it is argued that land-landscape-level experimentation can contribute to the quantification of ecological improvement (Anderegg et al., 2020). The findings in this study suggest a similar stance, however, they are made less concrete. Yet multiple examples show how successful experimentation in one place of the CSE network contributes to the overall knowledge and skill of other participating practitioners. Although this study does not include the quantifications necessary to make concrete assumptions, the findings imply that as experimentations evolve in aggregate and best practices are adopted and shared, the overall quality of the industry improves. As a result, the presented barriers can be lowered.

Thus far, the complete section of the contributions above draws on the collective dynamic of NbS implementation. It is suggested that the operationalization of NbS in this study is mediated by the experimental setting and its trickle-down effects on behavioural change while improving its financing prospects. This clearly stipulates the need for collective processes as a driver in narrowing the finance and operationalization gaps for NbS.

The primary discrepancy highlighted in the CSE literature revolves around determining whether the advantages of transitioning beyond the individual level outweigh the accompanying complexity (Montgomery et al., 2012). Considering the challenges of building strong networks in places with few resources (Sharir & Lerner, 2006; Phillips et al., 2015), three key instances emerged as scaling barriers. These barriers either meant that the current CSE methods required adjustments or that it was necessary to collaborate with more partners

beyond its current scope. Although this difficulty is persistent throughout the evolutionary stages, it does imply these complexities can be overcome. Suggesting that, at least in the case of NbS, the benefits appear to outweigh the complexities.

Referring back to the CSE principles of sharing skill, knowledge and finance for the creation of legitimacy (Spear, 2019), one could debate whether this is in fact a driver active on the individual level in the quest to survival instead of an acknowledgement that the complexity requires an holistic and integrated approach. However, following the data in this study these objectives are not mutually exclusive and can be pursued alongside each other. Much like how biodiversity is made up of interacting systems where one's conditions for survival progress the viability of the whole, one could compare this to the infancy of the NbS industry and its pathway to an ecosystem of partnerships. Nevertheless, the sustained duplicity in operational activity strengthens the existing tension between collaboration and competition (Seanor & Meaton, 2008). Resources are few and pursued by many. Trade-offs in for example project size are admittedly chosen for, while the general consensus is that small-holders require preferential treatment. This tension remains unresolved. Moreover, if the participants of a CSE with knowledge on the importance of small-holder inclusion regardless choose for larger opportunities, new questions emerge regarding the capabilities of CSE as a vehicle for the maximization of social value.

Another discrepancy emerges as the facilitation of the experimental setting is essentially dependent on intervention from entities that exert a top-down influence. Namely, beneficiaries receive knowledge, skill and funding to enable a scenario they would otherwise have much more difficulty with to achieve. Moreover, for NbS to become a scalable practice capable of improving well-being and biodiversity, its adoption must be supported by policymakers as well (Cohen-Shacham et al., 2019). This slightly contests the above notion on the bottom-up functioning of the phenomenon. Perceivingly, the domain of policymaking is beyond the scope of CSE. However, the CSE mechanism is argued to be capable of achieving traction. Therefore additionally this study contributes to exploring the limits of CSE.

When boiled down to its core, CSE is a constellation of social entrepreneurial actors pursuing efforts to overcome market barriers for a certain social cause (Montgomery et al., 2012; Spear, 2019). However, as displayed in the present study by the figure derived from Mumford et al., (2002), this additionally requires alterations in power which are held by governmental and financial institutions. These operate outside the disciplinary scope of SE. Following this logic, a gap emerges between the intent of CSE and its capabilities. However,

these institutional entities are not per definition excluded from operating within the SE domain. Besides, these assumptions are based on outcomes within this particular context. Nevertheless, the author remains careful with making attributions and advises applying additional integrated approaches such as assessing the proportionality of CSE in cross-sector partnerships.

5.3 Practical implications

Resulting from the original inquiry by the BWL initiative, the actionable content of this study pertains to the scaling of NbS while CSE served as a potential strategy in achieving this. This section is particularly relevant to actors in the NbS industry that identify with positions in stage two or above in the model (Fig. 2). With specific attention directed to the BWL initiative. First and foremost practitioners are requested to re-evaluate the nature of their current relationship with landscape beneficiaries. Although potentially difficult to assess from a one-sided perspective, thoroughly consider how the ‘nurturing values for a collaborative foundation’ are represented in current partnerships or can be embedded in future ones. The logic that resonates from meeting this criterion is that it fosters traits such as agency, autonomy, and entrepreneurship, indirectly reducing dependence on the relationship and resources. Especially inducing regenerative stewardship is perceived to unburden a landscape’s resource requirement as the intrinsic drive to catalyze their region's work is reinforced.

Secondly, it is advised to pursue improvement in collaborations within and beyond the partnership ecosystem. Currently, the industry is troubled by isomorphism where collaborating partners with supplementary capabilities fulfill similar needs. Most of the network participants that are not supported by institutional funding or grants are unsuccessful in securing funds for operational expenses. In that case, reduce ambiguity by tailoring one's services to specific landscape projects with presentable outcomes. Notwithstanding, the access to funding will remain problematic, however, the NbS examples that are currently deemed successful illustrate the accumulation of value-adding activities towards economies of scale because of their spatial rootedness.

Finally, in extension to point two, it is strongly recommended to design larger NbS processes and subsequently pursue funding for bulk packages. Summarized in the discussion section, doing so satisfies the majority of selection criteria that prevent decision-makers from investing at present. The direct outcomes entail increased returns, reduced risk, and an

increase in quality and efficiency. Moreover, not only do larger project sizes equal increased impact at scale but every successful undertaking in this direction systemically alters the current regime that obstructs the wide-scale adoption of NbS as a mitigator to the world's grand challenges.

5.4 Limitations and future research

Aside from the structural limitations addressed in the methodology section, there are additional limitations that need to be acknowledged. Initially, although the sample exclusively consisted of European-based NbS initiatives, a substantial part of the empirical data referred to examples outside this setting. As a result, the highly contextualized data stretches local, national, European and global dynamics. With this thesis repeatedly highlighting the unique nature of spatial settings, difficulty emerges with regard to presenting a robust theory on the scaling of NbS and the influence of CSE. Perceiving it as the most trustworthy alternative, the same method that minimizes the risk of availability bias was followed. Hence, the author intended to validate the presented findings by providing relatively similar phenomena.

Secondly, the data encompasses a wide variety of levels of analysis including the community-, landscape- and collective-level. Building forth on the researcher's inexperienced background and limited resources, an argument can be made on the potential lack of clarity. However, it is the author's conception that the provided model and adjacent explanation illustrated both the value of such a broad selection as well as the capacity to structure the data accordingly. Nevertheless, the broad analytical scope does increase exposure to the possibility of unsaturated data. More specifically, saturation was not achieved for data on the financial dynamics and institutional arena. Although these properties were not the focal domains of the study design, both subjects cannot be omitted based on the findings. Therefore it is encouraged to include proper measures for these attributes in future research.

The final limitation concerns the novelty of both the NbS and CSE domains. The research could have benefitted from including a more anchored strand of literature such as cross-sector partnerships. Although eventually actors of multiple sectors were represented in the model, the most important interactions appeared to occur in the SE domain, which justifies the taken approach.

On the other side, by studying novel domains, this exploratory endeavour provides ample direction for future research. Initially, efforts could be made to generalize the findings

to a wider public. For example by conducting either a longitudinal study or by taking multiple samples from various landscapes and evaluating the outcomes based on comparative analysis methods. Besides, in the pursuit of a better understanding of the effectiveness of inspirational capital, scientists could examine whether there is a correlation with the absence of quantitative evidence or if inspirational capital has independent mobilizing capacities. For example, an experiment could be designed in which a treatment group with access to numerical data is tested against a control group. Furthermore, combining the focus on mobilizing capabilities with the, in this study, underserved institutional arena, could additionally pose promising insights. In affiliation with the top-down and bottom-up dynamic in institutional voids, a better comprehension of mobilizing capabilities at the top is likely to benefit the maximisation of social value. The outcome of such research could then be implemented to strengthen the current model from this study.

Finally, intrigued by the hierarchical dynamics, other avenues could include a central focus on increasing the power at the bottom of the pyramid. A myriad of related topics at varying points of crystallization could be drawn from this pursuit. In association with the SE and NbS domains, interesting topics to include are ecological stewardship, social innovation and systemic entrepreneurship. The relevance of the former is already substantially discussed. However, including alternative forms of SE with specific systemic antecedents could lead to accumulated wisdom outside the scope of CSE which is deemed necessary to improve the scaling of NbS.

6. Conclusion

Bringing together two dispersed fields that both encounter debates regarding their independent feasibility, the present study examined the potential of CSE as a scaling strategy for NbS. The findings provide insights into how the collective organization of social entrepreneurial actors, which are positioned hierarchically around the implementation and scaling of NbS, can collectively effectuate support mechanisms that foster social value maximization by reinforcing the interrelationships at the landscape level. Opposing the scenario of inaction and substantiating the widely stated promises of Nature-based Solutions as mediating factors in environmental risk reductions, a CSE model was designed to theorize on the proposed research question. The conducted interviews with key informants led to the identification of four growth stages and are substantiated by additional data from industry reports. To a certain extent, it appears SE intermediaries, when jointly organizing, can

actively induce change in the beliefs, routines and power structures that the NbS industry is concerned with. Both from a top-down and bottom-up perspective. Continuous adaption remains necessary for all actors to structurally improve market connection and creation for the landscapes, while critical evaluations of one's operations should reduce the industry's isomorphism. Ultimately, when a collective effort is directed to larger NbS design processes, it is argued that institutional reform can be set in motion by bending the supply towards investor demand. Future research should seek to generalize the model and its components as well as delve deeper into the mobilizing capacities at the top and bottom. Although certainly no panacea, the transformative potential of collective social entrepreneurship. Just as uncertain as the future, so is the future of NbS. Although certainly no panacea, the transformative potential of collective social entrepreneurship is seen as a valuable contribution in finally enabling its long-anticipated implementation.

7. References:

- Albert, C., Brillinger, M., Guerrero, P., Gottwald, S., Henze, J., Schmidt, S., ... & Schröter, B. (2021). Planning nature-based solutions: Principles, steps, and insights. *Ambio*, *50*, 1446-1461.
- Alinsky, S. D. (1941). Community analysis and organization. *American Journal of Sociology*, *46*(6), 797-808.
- Alvord, S. H., Brown, L. D., & Letts, C. W. (2004). Social entrepreneurship and societal transformation: An exploratory study. *The journal of applied behavioral science*, *40*(3), 260-282.
- Anderegg, W. R., Trugman, A. T., Badgley, G., Anderson, C. M., Bartuska, A., Ciais, P., ... & Randerson, J. T. (2020). Climate-driven risks to the climate mitigation potential of forests. *Science*, *368*(6497), eaaz7005.
- Bansal, P., Smith, W. K., & Vaara, E. (2018). New ways of seeing through qualitative research. *Academy of management journal*, *61*(4), 1189-1195.
- Bell, E., Bryman, A., & Harley, B. (2018). *Business research methods*. Oxford university press.
- Biggs, R., Schlüter, M., Biggs, D., Bohensky, E. L., BurnSilver, S., Cundill, G., ... & West, P. C. (2012). Toward principles for enhancing the resilience of ecosystem services. *Annual review of environment and resources*, *37*, 421-448.

- Bruin, de, A., Shaw, E., & Lewis, K. V. (2017). The collaborative dynamic in social entrepreneurship. *Entrepreneurship & Regional Development*, 29(7-8), 575-585.
- Cárdenas, M. L., Wilde, V., Hagen-Zanker, A., Seifert-Dähm, I., Hutchins, M. G., & Loiselle, S. (2021). The circular benefits of participation in nature-based solutions. *Sustainability*, 13(8), 4344.
- Cash, D. W., Adger, W. N., Berkes, F., Garden, P., Lebel, L., Olsson, P., ... & Young, O. (2006). Scale and cross-scale dynamics: governance and information in a multilevel world. *Ecology and Society*, 11(2).
- Charmaz, K. (2006). *Constructing Grounded Theory*. London: SAGE publications ltd.
- Coleman, J. (1958). Relational analysis: The study of social organizations with survey methods. *Human organization*, 17(4), 28-36.
- Cohen-Shacham, E., Andrade, A., Dalton, J., Dudley, N., Jones, M., Kumar, C., ... & Walters, G. (2019). Core principles for successfully implementing and upscaling Nature-based Solutions. *Environmental Science & Policy*, 98, 20-29.
- Cohen-Shacham, E., Walters, G., Janzen, C., & Maginnis, S. (2016). Nature-based solutions to address global societal challenges. IUCN: Gland, Switzerland, 97, 2016-2036.
- Convention on Biological Diversity, 2004. *The Ecosystem Approach*. Montreal: Secretariat of the Convention on Biological Diversity. 50 p.
- Doherty, B., Haugh, H., & Lyon, F. (2014). Social enterprises as hybrid organizations: A review and research agenda. *International journal of management reviews*, 16(4), 417-436.
- Dufays, F., & Huybrechts, B. (2014). Connecting the dots for social value: A review on social networks and social entrepreneurship. *Journal of Social Entrepreneurship*, 5(2), 214-237.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, 14(4), 532-550.
- Elmqvist, T., Setälä, H., Handel, S. N., van der Ploeg, S., Aronson, J., Blignaut, J. N., ... & Groot, R. (2015). Benefits of restoring ecosystem services in urban areas. *Current opinion in environmental sustainability*, 14, 101-108.
- Ferraro, F., Etzion, D., & Gehman, J. (2015). Tackling grand challenges pragmatically: Robust action revisited. *Organization Studies*, 36(3), 363-390.

- Fastenrath, S., Bush, J., & Coenen, L. (2020). Scaling-up nature-based solutions. Lessons from the Living Melbourne strategy. *Geoforum*, 116, 63-72.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, 16(1), 15-31.
- Glaser, B. G. & Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for qualitative research*.
- Herenboeren. (2023). *About us - Herenboeren*. <https://herenboeren.nl/over-ons/>
- Hlady-Rispal, M., & Servantie, V. (2018). Deconstructing the way in which value is created in the context of social entrepreneurship. *International Journal of Management Reviews*, 20(1), 62-80.
- IPCC, 2022: *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. Cambridge, UK and New York, NY, USA, 3056 pp., doi:10.1017/9781009325844.
- Kimmel, C.E., Hull, R.B., 2012. Ecological entrepreneurship support networks: roles and functions for conservation organizations. *Geoforum* 43, 58e67.
- Lafortezza, R., Chen, J., Van Den Bosch, C. K., & Randrup, T. B. (2018). Nature-based solutions for resilient landscapes and cities. *Environmental research*, 165, 431-441.
- Mair, J., & Marti, I. (2006). Social entrepreneurship research: A source of explanation, prediction, and delight. *Journal of world business*, 41(1), 36-44.
- Mair, J., & Marti, I. (2009). Entrepreneurship in and around institutional voids: A case study from Bangladesh. *Journal of business venturing*, 24(5), 419-435.
- Marhdon, M., Visser, F., & Brinkley, I. (2010). *Demand and Innovation. How Customer Preferences Shape the Innovation Process*.
- Mathee, K. W., Mweemba, G., Pais, A. V., Van Stam, G., & Rijken, M. (2007, December). Bringing Internet connectivity to rural Zambia using a collaborative approach. In *2007 International Conference on Information and Communication Technologies and Development* (pp. 1-12). IEEE.

- McQuaid, S., Kooijman, E. D., Rhodes, M. L., & Cannon, S. M. (2021). Innovating with nature: factors influencing the success of nature-based enterprises. *Sustainability*, 13(22), 12488.
- Meadows, D. (1999). Leverage points. *Places to Intervene in a System*, 19, 28.
- Melanidis, M. S., & Hagerman, S. (2022). Competing narratives of nature-based solutions: Leveraging the power of nature or dangerous distraction?. *Environmental Science & Policy*, 132, 273-281.
- Miller, T. L., Grimes, M. G., McMullen, J. S., & Vogus, T. J. (2012). Venturing for others with heart and head: How compassion encourages social entrepreneurship. *Academy of management review*, 37(4), 616-640.
- Montgomery, A. W., Dacin, P. A., & Dacin, M. T. (2012). Collective social entrepreneurship: Collaboratively shaping social good. *Journal of business ethics*, 111, 375-388.
- Müller, K., Macků, V., Percey, E., & Alves, J. (2022). Insights Report: Bioregional Weaving Labs –A Collective Strategy for Unlocking Nature’s Potential to Reverse Climate Change and Biodiversity Loss.
- Mumford, M. D. (2002). Social innovation: ten cases from Benjamin Franklin. *Creativity research journal*, 14(2), 253-266.
- Nalau, J., Becken, S., & Mackey, B. (2018). Ecosystem-based Adaptation: A review of the constraints. *Environmental Science & Policy*, 89, 357-364.
- Nesshöver, C., Assmuth, T., Irvine, K. N., Rusch, G. M., Waylen, K. A., Delbaere, B., ... & Wittmer, H. (2017). The science, policy and practice of nature-based solutions: An interdisciplinary perspective. *Science of the total environment*, 579, 1215-1227.
- North, D. C. (1991). Institutions. *Journal of economic perspectives*, 5(1), 97-112.
- Nicholls, A. (2008). *Social entrepreneurship: New models of sustainable social change*. OUP Oxford.
- Oladipo, G. (2023, May 27). Insurance giant halts sale of new home policies in California due to wildfires. *The Guardian*.
<https://www.theguardian.com/us-news/2023/may/27/state-farm-home-insurance-california-wildfires>
- Paani Foundation. (2019). *Satyamev Jayate Water Cup: Overview, impact and success Stories* | Paani Foundation. <https://www.paanifoundation.in/watercup/>

- Pache, A. C., & Santos, F. (2013). Inside the hybrid organization: Selective coupling as a response to competing institutional logics. *Academy of management journal*, 56(4), 972-1001.
- Phillips, W., Lee, H., Ghobadian, A., O'regan, N., & James, P. (2015). Social innovation and social entrepreneurship: A systematic review. *Group & Organization Management*, 40(3), 428-461.
- Pless, N. M. (2012). Social entrepreneurship in theory and practice - An introduction. *Journal of Business Ethics*, 111(3), 317-320.
- Raymond, C. M., Breil, M., Nita, M. R., Kabisch, N., de Bel, M., Enzi, V., ... & Berry, P. (2017). An impact evaluation framework to support planning and evaluation of nature-based solutions projects. Report prepared by the EKLIPSE Expert Working Group on Nature-Based Solutions to Promote Climate Resilience in Urban Areas. Centre for Ecology and Hydrology.
- Saebi, T., Foss, N. J., & Linder, S. (2019). Social entrepreneurship research: Past achievements and future promises. *Journal of management*, 45(1), 70-95.
- Scott, M., & Bruce, R. (1987). Five stages of growth in small business. *Long range planning*, 20(3), 45-52.
- Scott, W. R. (2005). Institutional theory: Contributing to a theoretical research program. *Great minds in management: The process of theory development*, 37(2), 460-484.
- Seanor, P., & Meaton, J. (2008). Learning from failure, ambiguity and trust in social enterprise. *Social Enterprise Journal*, 4(1), 24-40.
- Seddon, N. (2022). Harnessing the potential of nature-based solutions for mitigating and adapting to climate change. *Science*, 376(6600), 1410-1416.
- Selsky, J. W., & Parker, B. (2005). Cross-sector partnerships to address social issues: Challenges to theory and practice. *Journal of Management*, 31(6), 849-873.
- Sharir, M., & Lerner, M. (2006). Gauging the success of social ventures initiated by individual social entrepreneurs. *Journal of world business*, 41(1), 6-20.
- Sjauw-Koen-Fa, A. R., Blok, V., & Omta, S. W. F. (2016). Critical Success Factors for Smallholder Inclusion in High Value-Adding Supply Chains by Food & Agribusiness Multinational Enterprise. *International Food and Agribusiness Management Review*, 19(1030-2016-83100), 83-112.

- Spear, R. (2006). Social entrepreneurship: a different model?. *International journal of social economics*, 33(5/6), 399-410.
- Spear, R. (2019). *Collective social entrepreneurship. A Research Agenda for Social Entrepreneurship*, Edward Elgar Publishing, Cheltenham, 82-93.
- Stephan, U., Uhlaner, L. M., & Stride, C. (2015). Institutions and social entrepreneurship: The role of institutional voids, institutional support, and institutional configurations. *Journal of International Business Studies*, 46, 308-331.
- Strauss, A., & Corbin, J. M. (1997). *Grounded theory in practice*. Sage.
- Schwarz, N., Strack, F., Bless, H., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of Retrieval as Information: Another Look at the Availability Heuristic. *Journal of Personality and Social Psychology*, 61(2).
- United Nations Environment Programme (2022). *Nature-based Solutions: Opportunities and Challenges for Scaling Up*. Nairobi.
- Weber, C., Kröger, A., & Lambrich, K. (2012). Scaling social enterprises—a theoretically grounded framework. *Frontiers of Entrepreneurship Research*, 32(19), 3.
- Westley, F., & Antadze, N. (2010). Making a difference: Strategies for scaling social innovation for greater impact. *Innovation Journal*, 15(2).
- Wiles, R., Crow, G., Heath, S., & Charles, V. (2008). The management of confidentiality and anonymity in social research. *International journal of social research methodology*, 11(5), 417-428.
- World Economic Forum (2020a). 395 Million New Jobs by 2030 if Businesses Prioritize Nature, Says World Economic Forum.
<https://www.weforum.org/press/2020/07/395-million-new-jobs-by-2030-if-businesses-prioritize-nature-says-world-economic-forum/>
- World Resource Institute (2018). *Natural Infrastructure in São Paulo's Water System*. Available from
<https://www.wri.org/research/natural-infrastructure-sao-paulos-water-system>
- Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5). sage.
- Zahra, S. A., Gedajlovic, E., Neubaum, D. O., & Shulman, J. M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. *Journal of business venturing*, 24(5), 519-532.

7.2 Archival References

BCG & WBCSD. (2023). *Cultivating farmer prosperity: Investing in regenerative agriculture*.

IUCN. (2022). *Enhancing the integration of governance in forest landscape restoration opportunities assessments*.

NetworkNature. (2022). *The NetworkNature Semester on Nature-based solutions and Standards - Final Output Report*.

UNDDR. (2021). *Nature-based Solutions for Disaster Risk Reduction - Words into action*.

UNEP a. (2022). *Nature-based Solutions: Opportunities and Challenges for Scaling Up*.

UNEP b. (2022). *State of Finance for Nature*.

WWF & South Pole. (2022). *Common success factors for bankable nature-based solutions*.

WWF. (2022). *Nature Based Solutions –a review of current financing barriers and how to overcome these*.

8. Appendices

Appendix A- research endeavours fellow BWL project students

Daniel Gunther's research aims to compare the institutional logics of financial institutions and Nature-based Enterprises (NbE; enterprises which's core activities are NbS) in the NbS-sector to better understand the sector's investment gap. Institutional logics' basic premise is that individuals and organizations are embedded in one or multiple institutional logics which govern "both what is valued and how things are valued" and the subsequent behaviour. For example, how 'nature', 'social innovation' and 'systems change' is valued. Different institutional logics can interact with each other in multiple ways: they can co-exist, or rival or complement each other. Understanding institutional logics at play and how they relate to each other can help to deploy better-targeted strategies for effective collaboration among practitioners – be it Nature-based Enterprises, investors, or policy makers. (copy approved)

RQ: How can Institutional Logics explain the investment gap in Nature-based Solutions?

Johanna Gartner's research is investigating how impact measurement of NbS by socio-environmental entrepreneurs can reduce the institutional complexity to improve the access to financial capital. At the core, SEs focus on social and environmental return while investment companies prioritise financial returns. In order to overcome this challenge, scholars noted that SEs who perform impact measurements are more likely to secure capital investments. The challenge is that there is no professional standard for SEs and financial institutions to adhere to. (copy approved)

RQ: How can impact measurement of NbS by social-entrepreneuers reduce the institutional complexity to improve access to financial investment?

Seppe Maes' research is aiming to analyse what elements from various business model frameworks are important for NbE's, funders and private investors in the communication between funder/investor and grantee/investee. The assumption is that the investment gap in NbS and social innovations can be (partially) explained by the difference in focus on certain elements of the business model between funder/investors and grantees/investees and the information that they actually need. By researching what elements of business models the different parties focus on, the aim is to find a BM framework that is best at capturing all those aspects together and that can, therefore, facilitate easy communication and serve as tool between investor, weaver and social entrepreneur. (copy approved)

RQ: How can the increasing complexity of 'True' sustainable business models be communicated by using business model meta-models?

Thom Sabel's research is analysing how Dutch social enterprises working on landscape restoration, protection and regeneration manage their financing strategies through the various stages of their lifecycle. The aim is to discover how their businessmodels and external financing are linked, to enhance SE's understanding of different types of social financing and increase their access to financial resources. (copy approved)

RQ: How can Dutch Social Enterprises manage their financing strategies through various stages of their lifecycle to enhance access to financial resources?

Johannes Ortenburg's research aims to analyse which business model elements of multi-stakeholder landscape restoration projects are conducive to scaling and how these can be leveraged to increase the impacts of the projects. This will be investigated by conducting a multiple case study that allows to compare different business models of a range of various projects across different landscapes and contexts. The aim is to conclude on crucial business model elements that are conducive to scaling environmental, social, and financial impacts, and specific processes and strategies that the social entrepreneurs in the BWL pursue to scale the impacts of their projects.(copy approved)

RQ: How can multi-stakeholder partnerships for landscape restoration leverage the business model elements of their projects to scale the environmental, social, and financial impacts?

Appendix B- BWL Systemic Innovation portfolio

Systemic Innovations Portfolio			
Inspiration	Society	Nature	Finance
Hoge Kempen National Park	Terre de Liens	Soul food forest farms	Climate Farmers
GIY (Grow It Yourself)	Herenboeren	Pur Projet	Soil Capital
Farming for Nature	Ludia a voda	Fundacja Łąka	Regionalwert AG
Terre et Humanisme	En Direct des Eleveurs	BeeOdiversity	
Bioregional	Incredible Edible	Asociación Forestal de Soria	
Klub Gaja	Slow Food	Citizens Forests	
North Sea Farmers	The Weather Makers	Savory Institute	
Bloom	True Footprint	Sea Ranger Service	
Drawdown Europe	Client Earth	BESE-products	
		Fundación Lonxanet	
		Klimamoor Brandenburg	
		ReNature	
		Sustainable Food Trust	
		European Rivers Network	

Appendix C- Interview protocol

1	Could you introduce me to your company by briefly summarizing the creation till where it stands today?
2	What further Systemic change do you want to pursue with this company?
2.1	> With that goal in mind, how would you define scaling?
3	What role do multistakeholder collaborations play in achieving this? (supplychains, governemnts, scientists, stakeholders, stichtingen/ NGO)
3.1	> Do you perceive there are obstacles in the industry hindering such collaborations?
4	Are there sometimes confrontations with manifested power stuctures? such as industry or politics?
4.1	> (If yes) Which did you experience?
5	How are local communities embedded in the network?
6	Do you experience community building in western society as something instrumental or something intrinsicy driven?
7	Can you come up with an example in where synergies were created in the value chain?
8	How do you deal with resistance among stakeholders?
9	What better opportunities do network participants enjoy?
10	Does participation in the network also pose limitations?
11	What obstacles are the limiting the widespread adoption of these structures on a larger level?
12	How does the complexity of managing the network structure weigh against its added value?

Appendix D- Table with examples on inspirational capital

Informant	Representative data	1st order code(s)
I3	“We buy at the moment from 1600 smallholder farmers, all the food they produce is brought to pick up points in the mountains, we deliver it to Pokhara to the city there, where we have central storage... From there, we operate already five school kitchens, two hospitals and training centres for medical students. So we deliver 20,000 meals a day, the business was in nine months profitable, and farmers get a very good price for their product... And we don't want to grow that company, but we make a franchise system for young local entrepreneurs opening their own canteen.”	Ambition to catalyze region; The business case for regenerative ag.
I4	“In Spain, we work in the Altiplano landscape and that started with a collective of farmers that make or want to make the transition from conventional agriculture to regenerative agriculture. But not only in the agricultural field, they also do nature restoration. Now there are several small companies coming out of their organizations, with quite a bit of experience, one of which is a foundation. That will really focus on spreading what they have learned in the rest of the Iberian peninsula.”	Collaboration beyond instrumental; Local community empowerment.
I4	"Letting go of things can also provide a kind of confidence. As long as it's letting go in a way that you don't dump it... We are here and we provide services and structure as needed. But we do give the confidence to the landscapes themselves to carry out what is necessary."	Local community empowerment
I5	“Raftaar she's working in Bangladesh, Bhutan and Nepal, and she was already very impactful working with rural fishing communities and innovating new building materials like sustainable building materials. Through our programs, the kind of new confidence that she builds she is now advocating in front of ministers really stepping up for the most vulnerable communities and women's rights. So we see that people just have a different grounding in life and in their work and a different kind of confidence that leads to a lot of external kinds of results and impacts.”	Collaboration beyond instrumental; Theory of change
I6	"You can show that restored ecosystems already improve the capacity of the soil in the area. If you are also active regeneratively as a farmer, or a group of smallholders, then your harvests will improve. Comparing the improved turnover picture to your costs makes you more money. That's kind of the gist. That certainly works for farmers."	The business case for regenerative ag.
I6	“Habiba started with one, now regenerative, farm and because of that example there are now 70 farmers who have learned how ... and apply that now. With a 75% water reduction, an increase in productivity... And it's the farmers themselves who started the reforestation on their land. So that cooling takes place, water remains and the earth becomes more fertile again.”	Ambition to catalyze region; Theory of change; Local community empowerment.

Appendix E - Table with examples on iterative and experimental setting

Informant	Representative data	1st order code(s)
I3	We had one of the most resisting farmers in Mertolo he was really, really against all that movement coming there. Now what the hell are these Brazilians bringing us as knowledge? We facilitated that roundtable, about 70 people from the village, cane farmers, customers, and politicians. This old guy didn't talk a single word for three hours. In the end, he stood up and said, You can have all my land if you want, I'm too old to do it, but you can have all my land for free to use.	Mapping local stakeholders; Roundtables for innovation and knowledge sharing.
I3	Three farms had different old varieties of grain, they grew. And each one was a bit unhappy that they just delivered these wonderful grains to the bulk flour market. They sat together with the baker and decided to create a new type of bread with these three flowers, just putting the money in a pot and dividing it at the end of the year.	Prototyping; Letting governance emerge.
I8	We will start designing the water retention planning and we are also deciding how many trees we want to plant and how we will do it this autumn. We are setting up these collaborations with the scouts, the churches, and I also got an agreement with the prisoners.	Prototyping; Mapping local stakeholders.

Appendix F - Table with examples on adjusting organizational structure

Informant	Representative data	1st order code(s)
14	For example, two MOOCs that we have made with Erasmus University. The idea is that if you can integrate landscape education in business schools, you can teach business people the ecological way of thinking.	Building specializing partnership ecosystem; leveraging knowledge sharing networks.
14	We are still trying to formulate our own role. But right now it's best described as a system builder or something. Or a system enabler. We want to keep our feet on the ground. So we do have really direct ties to a lot of landscapes. And our role is above all to bring together the important stakeholders.	Empowering local people with network resources; Building a specializing partnership ecosystem; Networks of networks.
16	We are now experimenting with something called the Green Design Lab. Where, for example, we have a dryland project in Somalia, Morocco, Egypt and Syria. And a dryland project in California and Mexico. Helping them understand how best to go about doing that. So you keep costs low again. Because that's the only requirement we have for participation. That you share your knowledge. So you pay nothing, you share your knowledge. That's time.	Leveraging knowledge sharing networks; Empowering local people with network resources; Building a specializing partnership ecosystem.
16	"At one of our knowledge-sharing sessions, she simply asked that question. "What can you do with that clay? I have clay everywhere these days." And then ideas came from three different locations to solve that. And one of them worked. So how do I dissolve clay has now become a piece of knowledge."	Leveraging knowledge sharing networks; Building a specializing partnership ecosystem.
17	We hosted an event at the beginning of May, that brought together people around peatlands sharing challenges and solutions at a peer level. We then also then had a following day event to bring external stakeholders, policy and decision-makers. It actually ended up being a peatland month, because two weeks after there was another event on peatlands in London. So it was a good time for everybody to be meeting, talking about all these challenges and getting some good momentum.	Building a specializing partnership ecosystem; Leveraging knowledge sharing networks.