A value chain perspective on sustainable entrepreneurship: Insights from marine debris recycling

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ABSTRACT

Literature is lacking comprehensive, exploratory analysis on how sustainable enterprises organize their value adding process. This paper is the first to offer a value chain perspective and therefore look holistically at the entire value adding process. Data is gathered within the marine debris recycling industry. It is found that the value chain is governed within a value network, which is initiated by and centred around the sustainable enterprise. The sustainable entrepreneur is coordinating and aligning the actors and stakeholders to create mutual benefit through triple bottom line values and horizontal co-creation. Social capital plays a crucial role within the sustainable chain network as it has bonding, bridging and linking function. This paper concludes with propositions and a process model on how sustainable entrepreneurs successfully realize their value chain.

KEYWORDS: Sustainable entrepreneurship, value chain, business model innovation, social capital, multi-stakeholder dialogue
**INTRODUCTION**

Sustainable enterprises intend to entrepreneurially tackle environmental and social problems. This effort requires radical organizational change in order to balance the triple bottom line – namely people, planet and profit. It involves envisioning, enacting and enabling transformational change (Nga & Shamuganatan, 2010). The transformational change demands collective efforts beyond the boundaries of the sustainable enterprise to connect actors in the sustainable value added process (Cohen & Winn, 2007). To achieve this, sustainable business models become more open and the neoclassical logic of economic rationality is disappearing. Value chain theory, however, has not yet decisively addressed this sustainable value added process. More precisely, how sustainable entrepreneurs build up and organize value chains remains an unexplored area of research. Thus, despite the acknowledged relevance of sustainable entrepreneurship, literature is lacking a stringent conceptualization of a value chain perspective on the process of sustainable value creation. Remaining open questions are: How are external actors integrated into a firm’s sustainable value chain? How are these value chains governed to successfully create the triple bottom line values? Previous literature argues that such questions can best be answered with exploratory case studies on successful sustainable entrepreneurs (e.g. Cohen & Winn, 2007; Dean & McMullen, 2007). By means of such case studies within the emerging industry of marine debris recycling, we develop a process model that conceptualizes the role of sustainable enterprises in the value creation process of integrating and governing actors both up- and downstream of their value chains.

For this purpose, marine debris recycling is an exceptionally well suited industry. The environmental and social importance is apparent. Marine debris in general and fishing gear in particular (which has up to this point only been
considered as waste) is an increasing threat to the biodiversity of the world’s aquatic systems. At the same time it is unexploited capital for thousands of local and/or artisanal coastal communities, because sufficient recycling or waste management schemes are missing. Collecting and recycling fishing gear and transforming it into a resource for new products, clearly represents a sustainable entrepreneurial opportunity. It solves an environmental market failure and it represents a new potential for sustainable local development. Creating a viable sustainable enterprise in this field requires an innovative business model approach, connecting a wide variety of stakeholders, developing new knowledge on recycling technologies and creating new markets by pushing customers towards a closed-loop product.

The primary data is collected by means of five exploratory case studies. Semi-structured in-depth interviews with key persons within the sustainable enterprises are conducted. Secondary data from these sustainable enterprises have been used for triangulation of the interview findings. The in-depth interviews are analysed using a structural coding process of open, axial and selective coding with underlying theoretical and conceptual memoing. Ultimately a set of propositions is derived that should serve as impetuses for further quantitative or mixed methods research on sustainable value chains.

The main implications are fourfold. First, alertness to opportunities, characterized by the innovation to create value from waste, and the collaborative effort to leverage existing resources are in line with previous research and indicate Hayekian and Schumpeterian elements found in the Austrian School. Second, in terms of power asymmetry, sustainable value chains (SVCs) are characterized by a high degree of equality, openness and horizontal co-creation, which represents the defined underlying logic of sustainable entrepreneurship. This is far beyond relational governance identified in previous research. SVCs allow for upgrading of
actors within the value chain through engagement and empowerment. The high complexity and dependency within the chain is governed through trust resulting from homophily or in other words the reciprocal understanding of multi-value creation. The centred involvement of the sustainable entrepreneur allows for a holistic life-cycle assessment on the entirety of the chain. Social capital and tacit knowledge become essential resources, which are reciprocally developed and shared throughout the value chain. Third, concerning the integration of stakeholders, social capital plays a vital role as well. The sustainable enterprise is operating within a core-group network that is tied together by bonding social capital. Bridging social capital is used to obtain resources, knowledge and financial support from other related networks. Rather than managerial control, which has been emphasized in traditional entrepreneurship literature, linking social capital is used to connect actors of different orders within the sustainable value chain. Linking social capital often stems from outside advisor such as NGOs or local leaders. The identified multiple value drivers within the value chain differentiate it from governance instruments described in the previous literature. Fourth, the value chain is enshrined in the value proposition of triple bottom line value creation, which is the raison d’être of the same. Such propositions can be seen as within the new business model logic, which allows for co-creation and leveraging the existing resources within the network (Jonker, 2012). In contrast to neoclassical profit maximizing firms, sustainable enterprises use a multi-stakeholder dialogue with institutional, environmental, social and economic participants to create their for-profit value chain. The ultimate goal is to open up their business model to related networks and achieve multi-value co-creation. The effectiveness of this multi-stakeholder dialogue is dependent on two dimensions, namely the quality of contact and the mentioned diverse actor engagement.
The remainder of this paper is structured as follows: First, we discuss the most important work on value chain, social capital and network theory (section 2). Then we provide an overview of the methodology and cases used (section 3). It follows the main analysis and a presentation of our conceptualization (section 4 and 5). We conclude with a discussion and implications for future research on sustainable value chains (sections 6 and 7).

BACKGROUND

Sustainable entrepreneurship bridges the two literature streams of sustainable development and entrepreneurship theory. In essence, it is the entrepreneurial solution to reaching the sustainability goal of ‘meeting the needs of the present without compromising the ability of future generations to meet their own needs’ as formulated in the Brundtlandt report (World Commission on Environment and Development, 1987: 43). It therefore moves away from the neoclassical approach to economics as practised for the last decades and combines environmental economics and social entrepreneurship (Dean & McMullen, 2007). Hence, at the heart of sustainable business models is a value proposition that comprises the triple bottom line – people, planet and profit. In doing so the for profit character is clearly emphasized, which distinguishes sustainable from social entrepreneurship (Cohen & Winn, 2007). In other words, one can understand sustainable entrepreneurship as efforts to obtain entrepreneurial rents through innovations, which target unsustainable conditions. These innovations emerge to address opportunities arising from market failures (Cohen & Winn, 2007; Dean & McMullen, 2007). We understand market failures as any existing state that diverges from Pareto efficiency and leads to externalities as private costs diverge from social ones (Pigou, 2013). Sustainable entrepreneurs can contribute to internalize externalities and hence help
aligning both costs (Dean & McMullen, 2007). Market failures can arise from inefficient firms, existing externalities, flawed pricing mechanisms or information asymmetries (Cohen & Winn, 2007). We therefore adopt the following definition of sustainable entrepreneurship: ‘The process of discovering, evaluating and exploiting economic opportunities that are present in market failures which detract from sustainability, including those that are environmentally relevant’ (Dean & McMullen, 2007: 58).

However, the literature still lacks comprehensive research on how sustainable entrepreneurs transform such opportunities into triple bottom line value adding process. Due to mounting pressures for global sustainability, collaboration between firms and important stakeholders are becoming the norm (Beattie & Smith, 2013). Values are generated in (informal) agreements, strategic alliances and formal partnerships. Thus, we argue that to understand the values adding process of sustainable entrepreneurship one has to understand how sustainable entrepreneurs build and organize their value chains. This is a novel approach as up to this point previous researchers had an atomic view on specific aspects of the value creation process but not a holistic one (Carter & Rogers, 2008; Seuring & Müller, 2008). In the following four critical factors of sustainable value chains are discussed, namely the governance, social networks, stakeholder communication and the underlying value proposition.

**Value chain governance.** When looking at SVCs the governance question arises: Which systems in the value chain are determining the structure and which role plays the sustainable enterprise in these systems? Existing value chain theory elaborates two distinguishing features between governance forms: power asymmetry and the degree of explicit coordination (Gereffi, et al., 2005). It can be assumed that power asymmetry has an influence on the hierarchy within the systems in a value
chain, if and which resources are shared and whether a dominant actor is the chain
driver (Gereffi, et al., 2005; Mentzer, et al., 2001). Therefore, it is proposed that the
governance structure, in particular the degree of power asymmetry within the SVC,
has an important influence on the communication and coordination between the
respective actors within the chain and therefore determines success of implementing
the value proposition.

Social networks. Social capital is a critical resource for the sustainable
entrepreneur as it foster the creation of intellectual capital through sharing of
knowledge, financial support, ideas and advise (Nga & Shamuganatan, 2010).
Therefore, it is needed to gain access to resources the sustainable enterprise could not
obtain on its own (Ostgaard & Birley, 1994). Furthermore, social capital potentially
has a bridging and bonding function when connecting the sustainable enterprise to
outside actors and networks. Within a network social capital can lead to close ties,
which bond the group based on similar norms and values (Gedajlovic, et al., 2013).
The concept of homophily becomes relevant due to the correlation between
friendship and resource sharing. Homophily is defined as the tendency to bond and
cooperate in networks with individuals that share the same values (Lin, 2005).
Furthermore, social capital can be used to bridge intercommunity networks through
weak ties (Portes, 1998; Woolcock & Narayan, 2000). Lastly, linking social capital
describes the ties that link value chain actors of lower order to higher order ones
(Woolcock & Narayan, 2001; Aldridge, et al., 2002). Concerning this linking function,
Sturgeon, et al. (2008) point out that socially embedded local actors can better fulfil
the operational requirements of the value chain and simultaneously upgrade their
position in the value chain if they leverage the existing knowledge of their social
network. We argue that such upgrading possibilities are crucial to the up-stream
parts of the SVC as they determine the resilience and the sustainable development of the suppliers.

Stakeholder communication. At the heart of sustainable entrepreneurship is sustainable development, which requires alignment of new actors such as NGOs, private sector organizations and sustainable entrepreneurs (Seelos & Mair, 2005). Bardy, et al. (2015) argue that four perspectives of a multi-stakeholder communication are relevant to successfully achieve sustainable development – an economic, ecological, institutional and social perspective. The challenge for sustainable entrepreneurs lies in aligning interests of stakeholders from these different, sometimes opposing spheres. One can imagine the need to cooperate with local governments, which caused the market failure the sustainable entrepreneur tries to address in the first place. In this context, the frequency of communication is important. Becerra and Gupta (2003) found that with increasing frequency the predetermined attitude between trustor and trustee becomes less relevant, which in turn fosters the built up of trust. Additionally, network theory argues that trust reduces opportunistic behaviour and fosters the integration into networks (Powell, 1990). Additionally, the frequency of communication fosters the built up of trust, which in turn leads to a reduction in moral hazards. Furthermore, a higher number of interactions lead to a higher amount of social capital, which in turn reduces transaction costs within the networks (Putnam, et al., 1994).

Value proposition. The value proposition, can be assumed to influence the value chain governance (Chesbrough & Rosenbloom, 2002). The multiple value creation of sustainable development clearly embeds sustainable enterprises in the new business model theory. Jonker (2012), for example, concludes that sustainable development from within a single firm is difficult to achieve. Collaborations and co-organization is needed to successfully create sustainable value. The author calls this
concept value co-creation. Value co-creation is defined in this paper as collaborative initiative of value chains and/or networks linking new partners and creating a sustainable value on multiple levels that is shared across the network (Osterwalder & Pigneur, 2009; Jonker, 2012). The authors argue that organizations have to open up their boundaries and rethink the term of ownership with a shift from firms to networks. The sustainable outcome has to be organized between NGOs, other companies and further stakeholders. New business model theory argues that value chains should be upgraded to value networks relying on close ties between the various stakeholders and that these networks should be deeply anchored in the local society (Jonker, 2012).

**DATA AND METHODOLOGY**

An abductive multiple case study approach is applied to allow to understand how sustainable entrepreneurs structure their value chains. To achieve a rich data availability, various data sources have been consulted: Semi-structured interviews, direct more informal communication (conferences) and public sources (website, newspaper article). The cases have been chosen based on purposeful sampling if they are ‘particularly suitable for illuminating and extending relationships and logic among constructs’ (Eisenhardt & Graebner, 2007: 27). The selection of cases with highly knowledgeable sustainable entrepreneurs in a very specialized industry has led to a total number of five in-depth cases. For every case an in-depth interview with the founder of the sustainable enterprise was conducted. Interviews were scheduled for 60 to 90 minutes.\(^1\) The semi-structured interview guide can be found in Appendix A. The in-depth interviews are recorded to increase transparency and reliability.

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\(^1\) All transcripts, the codebook and memos are available from the authors upon request
Verbatim transcripts of the interviews built the basis of analysis. All identifiers that
could relate to the participant have been excluded to ensure anonymity. The verbatim
transcripts are analytically read line-by-line, using annotation to get a first overview
of patterns and preliminary codes (Strauss & Corbin, 1998). In order to refine these
preliminary codes, different coding techniques are applied. The advantage is that the
range of raised issues and their attached meanings can be understood alongside with
‘topical-markers’ that make the locating of data feasible (Hennink, et al., 2011). In a
first step, open coding is used to determine overarching codes apparent in the data in
relation to the concepts derived from the literature review. These codes are noted in a
codebook to increase transparency and feasibility. Following Hennink, et al. (2011),
after reaching saturation within the third interview the initial coding was completed.
Additional codes have been added to the codebook, if they came up in applying the
codes for interview 4 and 5. In a second step, axial coding is used to determine
categories. The idea is to compare and bring back together the codes generated
through the open coding process (Strauss & Corbin, 1998). The aim is to make new
connections between the codes, derive categories and get a first picture of possible
relationships between the categories. Subsequently, selective coding is used to derive
central concepts to adapt the conceptual model. After each coding step a code tree
has been developed to structure the process, gain the big picture and increase
transparency (Boeije, 2002).

Throughout the whole coding process, descriptive and analytical memoing has
been used to disclose the underlying process of thought and increase transparency
(Hesse-Biber & Leavy, 2010). Memoing leads to a more ‘visible’ and ‘verifiable’
research process (Bowen, 2008: 4). This process is supported by the telescoping
technique to analyse the coded data. Hennink, et al. (2010) mention that the
technique is exceptionally useful for the conceptualization of the data. It encompasses
the switching between ‘zooming in’ and ‘zooming out’. The advantage is that the zooming in and out ensures that the broader scale conceptual model is grounded in the empirical detail of the data (Hennink, et al., 2010). The broader scale allows description of the general built up of the value chain and the overall governance and coordination, whereas the detailed view sheds light on the dialogue between the different actors and how to stimulate this dialogue in order to align interests.

In a final step conceptualizing is achieved by formulating propositions based on the relationships derived from the selective coding process. The participants have been given the opportunity to verify these propositions with means of a questionnaire in order to increase validity and achieve triangulation.² In the following an overview of the interviewed experts is given.

*Expert A* is the director of a sustainable enterprise with the ultimate aim to create a fishing gear recycling scheme that Europe was lacking until then. Therefore, the initiative has an established value chain stretching from the collection of the fishing gear to the recycling and manufacturing. *Expert A* is highly knowledgeable on the set-up of SVCs and possible obstacles in the process of doing so. The sustainable enterprise collects fishing gear on many coasts in Europe and Turkey and has integrated local actors such as the fishermen and fishing gear producers from many countries in their supply chain. Furthermore, it is coordinating the recycling process with partners in various European countries. As a member of one of the longest operating organizations in the fairly new process of fishing gear recycling, *Expert A* has gained idiosyncratic knowledge that is valuable for the research process.

*Expert B* is the innovation director of a unique project empowering local, artisanal fishermen in Asia and Africa. The sustainable entrepreneurial initiative is a partnership of a European for-profit organization and a NGO. The collected fishing gear

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² Questionnaires are available on request from the authors.
nets are sold to an international recycler and the profits are re-directed into the local community in form of a community bank. Through the community banking approach the initiative empowers the local fishermen with the access to finance, funding and the know-how of net-collection and prices for the same. Micro-loans and insurances are offered and local community members have the possibility to save a part of their income. The community banking approach gives them autonomy on their financial decisions and the ability to plan more securely strategically ahead. The initiative brings together different commercial, public, environmental and social interests in a multi-stakeholder initiative that works in a sustainable entrepreneurial context to solve the marine litter problem in combination with local poverty reduction.

**Expert C** has been chosen being a member of two organizations deemed important for the research process. Firstly, he is a representing board member of a company recycling fishing gear. With an advanced cradle-to-cradle technology the company ensures a 98-99% closed loop recycling process. The majority of the technology to recycle fishing gear has been developed in-house through the knowledge embedded in a network of a diverse set of partners. Additionally, **Expert C** is the project manager in an international foundation, which is dedicated in aligning, mobilizing and uniting the fishery sector, public authorities and the international plastics industry in order to combat the problem of marine litter. **Expert C** can be considered a highly knowledgeable informant with over 30 years of experience in the field of recycling and value chain processes of the same and is one of the spearheads in the fishing gear recycling process.

**Expert D** is the CEO of a Northern American company integrating artisanal fishermen as well as industrial fishing syndicates in Latin America in their SVC of producing products from recycled fishing gear. The sustainable enterprise is cooperating with NGOs, local leaders and communities by offering them an
additional source of income and a waste management system for their fishing nets. The waste management system is lacking due to privatization of public spaces. Therefore, the company is creating values on multiple social, environmental and economical levels through holistically incorporating the four system conditions of a sustainable society along their business cycle (The Natural Step, 2015).

*Expert E* is the Co-Founder of a sustainable enterprise that turns plastic bottles into a currency. In doing so they offer local communities a new source of additional income and financial security. Acting as a sustainable entrepreneurial broker, they stimulate entrepreneurial activity on the local level by providing the communities with the necessary technology and know-how, setting up regional collection hubs and organizing the recycling process. Using long-term involvement and local actor cooperation, the sustainable enterprise is able to build up durable structures to increase the economical resilience of the community and offer a long-term perspective. Using a replicable model the sustainable enterprise will soon set out to include multiple communities on different continents.

**FINDINGS**

The trigger for setting up a sustainable value chain is twofold. On the classical entrepreneurial side it becomes apparent that there is a sustainable *business opportunity* that results from a need due to an inefficient status quo.

“So what started from a very wild idea of how can we involve the fishing community of the maritime industry in solving part of the issues from bringing what is out there back on land turned out to be a product.” - *Expert C*

The cases show that in order to determine if a status quo is inefficient, the sustainable entrepreneur has to be aware of the external environment that determines the success of the venture. In this context privatization processes that result from
withdraws of governments from public spaces are important (Bjerke & Karlsson, 2013). In the case of marine debris, and fishing gear in particular, there is either a non-existing waste management system or a very inefficient one that does not pay attention to the handling and recycling obstacles of the material. Looking at developing countries, marine debris becomes more and more a problem that affects the quality of life of local communities and their artisanal fishery. Here it becomes even more apparent that the privatization process of former government responsibilities has led to an inefficient outcome that offers a possibility for sustainable entrepreneurs to seize a business opportunity that can create value for the local communities as well by meeting their need of a waste management system (Expert D), financial security (Expert B) or empowerment (Expert E).

To fill such a void the sustainable entrepreneur has to have a certain mindset that allows risk taking and a long-term vision. Most importantly, the participants stress that operating in a former void means creating from scratch, which involves innovation along the whole business process.

“We had to learn how to deal with the material, how to transport it, find companies that could recycle it, cooperate with those companies trying to find a way they could recycle it, because there was very little recycling of those materials seven or eight years ago. Very much is based on innovation” - Expert A

Due to the fact that there is no benchmarking technology in recycling, technology had to be developed in-house. The innovation process encompasses the value chain as well. Building up a value chain from scratch involves bringing together actors that have not been connected before. The participants stress the importance of the network in this process. Therefore, the network had to be strengthened, new ties have to be made and actor interests aligned.
Accordingly, the *value chain governance* can be described as a network. The sustainable enterprise is plugged into different kinds of networks that interact. In four out of five cases, the sustainable enterprise is a joint effort of partners that share the ownership (Experts A, B, C and E). These partnerships are described by the experts as the core group network bound by a friendship-like relationship. The cases show that it can be differentiated between the core group with very strong ties and a wider circle of outside actors that are integrated through weaker ties. The participants stress the relevance of the size of such networks.

“So we are always looking outside to connect. But the one thing I would say is I would rather connect with three people really well and actually collaborate and share information than struggling connections with fifty people.” – Expert B

Stronger ties with fewer actors are considered to be more effective, or as Expert B puts it, its ‘walk versus talk’. These networks can be described as very open with a strong affinity to include outside actors. Especially within the core group it is a very dense network, with strong ties and a very close collaboration (Aldrich & Whetten, 1981). The function of the core group network is crucial in the value chain built up. Operating in a developing industry the core group offers knowledge on processes and recycling technology, such as induction technology (Expert C) or technology for bailing (Expert B) or dismantling fishing gear (Expert A). Additionally, it provides contacts to members in the wider network that are needed to approach customers and suppliers. They offer local, cultural knowledge and access to umbrella organizations of local actors. Lastly, the core group network is an important source of funding to cover the extensive costs for setting up the value chain.

The collaborative relationship between the actors within the core group is transferred to the whole chain. The central key for the coordination in the chain is cooperation and knowledge respectively resource sharing.
“So in this value chain among the key partners there is a very great amount of openness and cooperation. Much more than competition. There is very little competition and discussion about prices.” - **Expert A**

The experts emphasize that the chain is characterised through the aforementioned networks that create very complex and intertwined connections with high asset specificity in terms of technology (e.g. net bailing and recycling) and relationships, as the sustainable enterprise is the only buyer of material from local actors. This dependency is governed through trust that results from a long-term commitment and transparency of the sustainable entrepreneur. However, reputation and trust are not built up through ethnic ties or geographical proximity, as Gereffi *et al.* (2005) suggest, but within a *value network* that represents the basic logic that drives the chain (Jonker, 2012). The participants stress that complying with these values is of utmost importance to be integrated into the chain. Expert C argues that a triple-bottom-line can only be achieved if there is a high equality between the actors in the chain and a mutual benefit for all involved, with the sustainable enterprise coordinating and connecting. Therefore, one can argue that the value chain can rather be described as a value network, where there is a shared value creation and responsibility between the actors and stakeholders. In the end it comes down to what Expert C calls a ‘multi-stakeholder horizontal co-creation’, where interests and benefits of actors and stakeholders are aligned on a sustainable triple-bottom-line level.

“[...] an example of horizontal co-creation, which is unheard of, but it’s the only way we can achieve circularity, which leads to a circular economy. We have to act outside our comfort zone to get something changed.” - **Expert C**

*Horizontal co-creation* consequently implies diverse multi-actor engagement while achieving a mutual benefit for the actors involved. The participants mention three
fields of engagement. The first is the governmental side. Despite the business
opportunity arising due to privatization processes and governmental withdraw, the
public authorities set the level field of playing for the sustainable enterprise. Turning
a material that has previously been considered as waste into a value product leads to
conflicting regulations and laws within and between the different countries of the
supply chain. Experts A and C stress the need for lobbying, especially on a
supranational level, to obtain permissions. However, the government also acts as an
enabler by providing funds in the start-up phase of the sustainable enterprise. The
only exemption is Expert E that stresses no governmental involvement to increase
autonomy, flexibility and effectiveness of making decisions.

The downstream part of the value chain has to be engaged to create a demand
for the product. All sustainable enterprises are using the triple-bottom-line story to
connect with the customer and frame their message.

“[...] the more you can genuinely connect with what the people care about is when you
get people going out of their way to introduce you to the right people, which is again
typical for the sustainable enterprise. Like when you have a triple-bottom-line end
solution and hitting those things people care about.” - Expert E

The intrinsic value of such a connection is seen as boosting sales and considered
higher than the actual value of recycling nets. In order to create a demand, the
sustainable enterprise has to genuinely connect with the customer. The more values
are offered, the more possibilities of emotional connections are given. To co-create
the customers are offered platforms to express their views. The ultimate goal is to
create a ‘movement’ (Expert E), where actors are actively approaching and
demanding the product to create a market for the recycled material.

On the up-stream side the local actor engagement can be described as
twofold. Characteristic in all cases is the usage of the existing value network contacts
to approach umbrella organizations or leaders that can be used as a springboard to engage a larger number of individual actors. Here social capital clearly has a bridging function. Experts A and C mention harbours, fishery agencies, umbrella organizations of fishermen, fish farmers and net producers. Experts B, D and E mention local leaders, heads of fishing syndicates and local NGOs.

“[…] we also begin with the head, the president of the fishing syndicate of that area, because he’s the one that calls the shots and he is the one that when someone is questioning what we are doing he’ll just say this is going to happen and everyone trusts him and goes for it. So usually it’s for key stakeholders you focus on the community leaders, because that creates the best outcome.” - Expert D

These higher order actors are used to educate the local actors, spread the message and align interests. On the community level business-NGO-partnerships are used to overcome liability of foreignness, increase trust and assess the quality of the local community in terms of social capital, intrinsic motivation and infrastructure. It becomes apparent that for truly integrating local communities in the supply chain the sustainable entrepreneur has to empower them. The sustainable enterprise sets an entrepreneurial stimulus by providing financial security, knowledge and technology.

The result is a long-term and sustainable solution, strengthening the local structures from within. The ultimate goal is to transform the local actors into entrepreneurs themselves that can thrive in an autonomous way.

“I honestly think that in any place in which people are just surviving you have an entrepreneurial mind-set, otherwise you would probably not be surviving. […] I think any time there is hardship there is forced creative entrepreneurship embedded in the culture.” - Expert E

In order to connect different networks and stakeholders the participants stress the importance of a multi-stakeholder dialogue. Instead of every local actor, higher order
actors should be addressed to effectively include as many actors as possible. Mostly a
clear representative is preferred for each stakeholder that is frequently addressed in a
very open and close relationship, which Expert A considers a friendship. Expert C
argues that the message expressed has to be made feasible and touchable. To align
different interests and achieve multi-level sustainability, actors from different
backgrounds have to be brought together to achieve a diverse dialogue on economic,
environmental and social topics.

“It’s a willingness to create space where conflicting views are ok, where people can
listen to ... they are free to put their point across. [...] There is a lot goodwill
collaboration that’s going on.” - Expert B

Expert B argues that the quality of the dialogue is enhanced by mutual interest and
mutual respect. There has to be an open discussion with free speech, space for
differing opinions and an honest communication of goals and expectations. A synergy
based on the same values in the network is used to create empathy through personal
contact in meetings and conferences. The participants stress the importance of
bridging interests by showing goodwill and giving in to a certain extent. It becomes
clear that the sustainable enterprise is the initiator and central point in such a multi-
stakeholder dialogue.

CONCEPTUALIZATION

*Sustainable value chain initiation.* All interviewees clearly indicate that the
sustainable enterprises have to understand the need and inefficient status quo, which
indicates public voids (Bjerke & Karlsson, 2013). Such superior alertness to
opportunity puts it into the realm of entrepreneurship theory within the Austrian
school. The goal is to find an innovative solution to such need (Expert A). The process
is “missionary work” (Expert C) that involves a constant learning process, adaptation
of the business model along the way and innovation on all levels such as processes, technology and relationships. The sustainable enterprise is not bound by internal endowments, but looks outside to network and co-create resources and values. Value is created and measured not only in economic terms, but the social mission and improvement is the long-term goal. Local actors are not integrated for the short-term economic benefit, but to create a long-term sustainable return for all actors involved.

**Proposition 1a.** *Sustainable value chains emerge from a business opportunity to create sustainable multiple-level values that exceed the enterprises boundaries and personal profit.*

**Proposition 1b.** *The sustainable enterprise has a mindset to leverage the restricted resources by using outside networks and social capital to constantly innovate, learn and co-create.*

**Social capital.** It becomes apparent that social capital is important on three levels. Bonding social capital is used to embed the social enterprise in the local situation, to understand the local conditions and build up trust and collaboration to overcome liabilities of foreignness (Experts B, D and E). Trust is built up by understanding, listening and genuinely connecting with the local actor (Expert B). The definition of the local scope can vary from regions (Experts A and C) to community level (Experts B, D and E). External actors provide bridging social capital in form of local knowledge, contacts, cultural understanding and reputation that help to build up trust. Actors are not only integrated for technology and know-how but for providing bridging social capital for the network. Social capital becomes a currency that NGOs and higher order actors such as umbrella agencies and local leaders pay in order to be integrated. Within communities, besides the infrastructure and availability of supply, linking social capital is part of the quality of the local situation. It is a criteria for the
Proposition 2a. Bonding social capital within the core group network is created through friendship and a basic logic that results from the common goal of multiple value creation.

Proposition 2b. Bridging social capital benefits sustainable value chain integration as it helps to overcome liability of foreignness, build up trust, stimulate commitment and obtain resources.

Proposition 2c. Linking social capital and institutional infrastructure define the quality of the local situation and are a prerequisite sustainable value chain integration.

Depending on the local scope, sustainable entrepreneurs clearly show community responsibility (Fellhofer, et al., 2014). In contrast to sustainable supply chains they are focusing on empowerment. Local actors are provided with financial security (Expert B), infrastructure for waste management (Expert D) and social capital. This is achieved through knowledge and resource sharing and local leader involvement. An entrepreneurial stimulus is set to ‘unleash’ (Expert E) the entrepreneurial endowments of the local actors. The ultimate goal is to create autonomous, sustainable structures that are commercially competitive in terms of quality and price. On the community level this leads to self-sufficiency (Expert D).

Proposition 2d. Sustainable enterprises use empowerment in terms of local community education, knowledge and social capital sharing to achieve commercially competitive value chain integration and ultimately create autonomous and sustainable structures.
Value chain governance. To achieve the goal of a long-term sustainable return on investments, the sustainable enterprise chooses a form of value chain governance that emphasizes co-creation. Being restricted by missing internal resources, it operates in different networks, which provide funding, resources and knowledge. Among the owners and key stakeholders of the core group network is a very high density and diversity of actors that lead to bonding social capital (Lin, 2005; Conway & Jones, 2006). Close ties and friendship-like relationships (Expert A) dominate the problem solving process. This network is characterized by a high amount of openness, ties to outside actors and a willingness to cooperate and co-create through bridging social capital. Co-creation is achieved by equality between the actors, resource and knowledge sharing and a holistic value chain involvement of the sustainable enterprise. Open source platforms are used to find like-minded sustainable entrepreneurs to increase the impact through finding collaborative solutions for all sources of marine litter. Even if there is no dominant actor the sustainable enterprise appears to be the coordinator of the chain (Experts A, C, D and E). The value chain properties and governance along the chain can be described as a sustainable value network rooted in a basic logic, trust, cooperation and common goal that go further than relational structures described in previous literature (Gereffi, et al., 2005). The sustainable enterprise uses the reputation and social capital of other actors in the value network, such as local leaders, umbrella organizations and NGOs, to build up trust and mutual commitment that governs for the spatial distance in the chain.

Proposition 3a. The sustainable value chain is governed within a value network, that is initiated by and centred around the sustainable enterprise,
which is coordinating and aligning the actors and stakeholders to create mutual benefit through mutual sharing and horizontal co-creation.

Proposition 3b. High amounts of equality and willingness to cooperate with outside actors lead to bridging and bonding social capital, which are used to govern spatial distance within the sustainable value chain.

The value network is built around and upon the value proposition of the sustainable enterprise. The value proposition can be described as reflecting the mission to create a sustainable social return on investment in the long-term. By incorporating social and environmental values in the business model, social enterprises can utilize the value network to implement a holistic life cycle assessment of the business processes and products. The social enterprise is accountable for the social and environmental impact along the whole chain. This is ensured through a holistic chain involvement. A concept Expert D calls ‘handprint’, in contrast to a carbon footprint. It is about what one can give instead of what you leave traces of (Harvard School of Public Health, 2015). The raison d’être is the enshrined triple-bottom-line practice in the entire value network, which creates bonding social capital through mutual understanding (Expert E). Actors are only integrated if they are complying with the existing values. The life cycle is holistically assessed, which results in triple-bottom-line outcomes on all stages of the value chain.

Proposition 4a. The sustainable value network is utilized for holistic life cycle assessment and value chain involvement to increase accountability and awareness along the value chain.
Proposition 4b. Bonding social capital within the value network based on equally emphasized triple-bottom-line values in the value proposition is more beneficial for sustainable development and value chain integration.

Multi-stakeholder dialogue. Sustainable enterprises are using dialogues as a tool to bridge interests and win over actors for their cause (Alvord, et al., 2004). Therefore, one has to determine how to enhance and facilitate such a dialogue, whom to integrate and how to increase the quality. The participants stress the multi-stakeholder nature of such a dialogue. Engaging within different networks and with different stakeholders requires enhancing the effectiveness of communication. A very close and regular communication paired with clear representatives for each stakeholder in personal meetings is used to enhance the effectiveness. Expert C stresses the need for feasibility and frontrunner engagement. Close relationships to key stakeholders, often higher order actors such as umbrella organizations or local leaders, are needed to achieve a trickle-down-effect to effectively address local actors on a broader scale. The reason is non-feasibility of addressing every local actor or customer individually (Experts A, C and D). The literature focuses on the frequency of interactions, but the in-depth interviews show that the quality of communication is equally important. Quality is defined through mutual respect and interest and is achieved through allowing free speech, sharing of knowledge and ideas in a giving and receiving partnership that creates mutual benefit. Creating a space where conflicting views are accepted is the first step to bridge colliding interests (Expert B). Personal contact and synergy, resulting from a basic logic or higher order common goal, lead to a built up of trust and friendship-like relationships. These enhance the quality of the dialogue (Expert A) as described by the concept of homophily (Lin, 2005).
Proposition 5a. Value chain integration is achieved through effective multi-stakeholder communication, enhanced by personal, regular contact with clear stakeholder representatives and front-runner-engagement, which leads to the built up of trust and social capital.

Proposition 5b. Quality of the multi-stakeholder dialogue is enhanced by mutual respect, mutual interest and trust resulting from mutual benefit, mutual sharing and homophily.

The literature argues that sustainable development is achieved if actors from the triple-bottom-line perspectives and institutional ones are brought together. The in-depth interviews corroborate this view. The government determines the level field of playing and can be regulator and enabler at the same time. Lobbying is needed to change institutions from within (Expert C). However, the existing literature misses out the importance of the customer side. In order to be profitable and share value along the chain, there has to be a commercial demand. This underlines the for profit nature of the sustainable enterprises. Operating in an innovative field, a market has to be created first. Customer engagement involves using the multi-value creation as marketing tool (Experts A, B, D) to genuinely connect with the customer to create emotional bonds (Expert E).

Proposition 6a. Sustainable value chains require diverse multi-actor engagement, in terms of social, ecological, economic and institutional background, to increase the value impact.

Proposition 6b. Customer engagement is a prerequisite for economic sustainability, which is at the core of the business model and enhanced by genuine customer connections based on the multi-value creation.
Figure 1 depicts the final model of value chain integration through sustainable entrepreneurship that has been derived from the aforementioned findings. The underlying logic of the model is based on the value proposition of the sustainable enterprise. The sustainable enterprise is driven by motivation to create sustainable multi-level values that exceed the firm boundaries (P1a). Operating with an internal resource restriction, the enterprise is plugged into a core group network that develops strong ties in form of bonding social capital. Consequently, the sustainable enterprise reaches out to external actors to leverage the existing capital and gain outside knowledge (P1b). The result is a growing number of networks and whose resource endowments are taken advantage of. Social capital is used to bridge between these networks. Consequently, the value chain is embedded in a value network that determines the relationship and governance between the actors (P3a) and is the central concept of the model. The sharing culture, equality between the actors and multi-level value understanding in the network can be considered as the bonding social capital and are translated into a collaborative value chain that is governed through trust, reputation and value commitment (P3b). The model depicts the close interrelation between the two concepts. Another characteristic is the direct local actor engagement. Since social capital is a major resource that is shared within the network and along the chain (P2a/b), it is possible to directly engage local actors. Bridging social capital of NGOs or local leaders facilitate the process. Local actor integration is achieved through empowerment, which leads to commercial competitiveness and the built up of linking social capital (P2c/d).

Value chain integration as well as sustainable development are moderated by a multi-stakeholder dialogue. To achieve a sustainable outcome, the sustainable enterprise has to connect a diverse set of actors from economic, ecological, social and institutional spheres (P6a). Additionally, customers play a vital role in creating
demand and a market (P6b). Achieving a positive influence on the value chain integration and sustainable development is only possible if the effectiveness and quality of the dialogue is enhanced (P5a and P5b).

**FURTHER RESEARCH**

This research has several limitations that need to be further discussed. Firstly, it underlies the well-known limitations of purposeful, non-random sampling, which decreases reliability and validity (Eisenhardt, 1989; Strauss & Corbin, 1998). Even if experts have been chosen with a diverse perspective on the problem, retrospective sense making and impression making potentially bias the results as the findings are embedded in the specific contexts of the chosen cases (Eisenhardt & Graebner, 2007). Additionally, semi-structured in-depth interviews naturally bear an interviewer bias. This bias can never be completely offset by the triangulation. Therefore, it is proposed to take the developed propositions as impetuses for a quantitative or mixed-method study to deductively test the relationships between the concepts (Hennink, et al., 2011). Secondly, only sustainable enterprises within marine debris recycling have been chosen. However, we are convinced that our analysis has proven that the selected industry shows the typical characteristics of sustainable entrepreneurship and the derived concepts are found within sustainable enterprises of diverse cultural and geographical background. Future research can replicate our study and test the generalizability of our findings.
FIGURE 1: Process model of value chain integration through sustainable entrepreneurship
Despite the limitations, this research has several implications for further research. Other scholars could elaborate the different roles in the multi-stakeholder dialogue. The participants have pointed out contradicting roles of the government that can either be a regulator or an enabler. Sometimes even both dynamic forces work at the same time, which could depend on the stringency of local social and environmental regulations. This research has pointed out the driving element of the customer in sustainable entrepreneurship. It remains questionable to which extent customers can actively play a role within the sustainable value chain.

**CONCLUSION**

This paper set out to clarify how sustainable entrepreneurs built up and organize their value chains. Up to this point, existing theory was missing a comprehensive value chain approach to sustainable entrepreneurship. Little was known about how sustainable enterprises govern their value chains and put their value proposition to work. This research has shown that sustainable value chains clearly fall out of the categorization of previous literature. Traditional value chains organize value adding activities in a linear fashion resulting in perceived customer value added and competitive economic advantages for the stakeholders involved (Gereffi, et al., 2005). These value chains are solely driven by economic rationality representing the transaction cost theory and new institutional economics (Williamson, 1979). This research indicates, however, that value chains initiated by sustainable enterprises underlie different governance and coordination mechanisms. Following the reasoning of Gereffi, et al. (2005), one can argue that the complexity and dependency within the chain is governed through trust that results from long-term commitment and social capital that is bridging spatial and ethnical distance. The actors in the chain are operating as equal partners that achieve resource sharing
in terms of tacit knowledge, technology and social capital. Instead of explicit coordination the sustainable enterprise chooses holistic chain involvement as a coordination mechanism. These chains are driven by the underlying logic of sustainable entrepreneurship to create mutually and equally social, environmental and economic return on investment, which requires multi-value generation beyond economic rationality. Consequently, not any actor along the chain has to provide a value added in economic terms and there is a mutual benefit for every actor involved that goes beyond economic rationality. Therefore, this research contributes to value chain theory as it introduces a governance form which can be labelled sustainable value networks. These are best described through high collaboration, equality and openness, which is in line with Jonker (2012). Social capital becomes a significant resource along these chains with its bridging, bonding and linking characteristics, substituting for managerial control.

These results produce valuables insights concerning the nature of value chain integration through sustainable entrepreneurship. It further deepens the sustainable entrepreneurship and value chain theory by being the first to both literature streams and incorporate the new business model theory perspective. Furthermore, the cases provide examples of successful value chain set up driven from sustainable opportunities, which can provide invaluable insights and guidance for future sustainable entrepreneurs.
REFERENCES


http://www.chgeharvard.org/topic/handprint-new-framework-sustainability

[Accessed 10 December 2015]


Appendix

Appendix A: Semi-structured interview guide

Introduction
1) How long has [organization] been operating?  
Probe: history, stages of set-up, countries

2) With regard to the success of [organization], have you reached your goals so far?  
Probe: Milestones, collected amount of litter, number of partners, return

3) What are your strategic goals for the next five years?  
Probe: Amount of collected litter, number of cooperating municipalities, financial keys

4) How would you describe the biggest challenges in setting up [organization]?  
Probe: partner selection, obstacles by non-cooperation, technological

5) How would you describe the role of governmental institutions in this process?  
Probe: Government funding, role of municipalities, regulation as an obstacle

Power Asymmetry in the Value Chain
1) How is your value chain built up?  
Probe: key actors, countries, number of actors

2) What are the processes and responsibilities of each actor along the chain?  
Probe: collection processes, equal distribution

3) Is there a dominant actor in the chain?  
Probe: managerial control, lead firm

4) Do you profit from knowledge and resources of other actors in your value chain?  
Probe: which kind of resources/knowledge, which actors share which not

5) On which kinds of processes and problem solving activities do you cooperate with the other members in the chain?  
Probe: start-up phase, values

Multi-Stakeholder Dialogue
1) What are the key stakeholders in your value chain [organization]?  
Probe: stakeholder-mapping, relationships

2) How does your company interact with their key stakeholders?  
Probe: changes over time, differences between partners, antecedent for success

3) How important is a personal dialogue in these interactions?  

4) How do you increase the quality of your dialogue?
5) How do you stimulate the dialogue with the actors along the chain?

6) What is meant by sustainability in your organization?
   **Probe:** differences to other stakeholders

7) How would you name the antecedents to achieve a truly sustainable business outcome?
   **Probe:** multi-level, multi-actor, different levels

**New Business Models**
1) How would you describe your current business model?
   **Probe:** innovation, differences to other organizations

2) What kind of values does your current business model create?
   **Probe:** value proposition

3) How do you measure the success of [organization] at the end of the year?
   **Probe:** financial statement, sustainable development, economical

4) Did you start new collaborations to set up your business model?
   **Probe:** number of actors in business model, sharing of resources, how to set up

5) How open to external influences would you consider your business model?

6) How do you open-up your business model?

7) How do you keep a close dialogue with your stakeholders?

**Social Capital**
1) What are your key partners?
   **Probe:** fishery agencies, harbours, NGOs, municipality

2) How closely is [organization] embedded in stakeholder networks?
   **Probe:** communication patterns, which local partners

3) How important is the local embeddedness for the success of [organization]?
   **Probe:** Leverage of resources, reflection personal embeddedness

4) Do you maintain close ties to local partners?

5) To which account do stakeholders contribute to the business model?
   **Probe:** usage and degree of local ties, partners

6) How would you describe your relationship between different stakeholder networks?
   **Probe:** linking actors, strength of ties
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