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THE CONTRIBUTION OF SOCIALLY
DRIVEN BUSINESSES AND INNOVATIONS TO
SOCIAL SUSTAINABILITY

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Abstract

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Social sustainability is considered a fundamental component of sustainable development. A multifaceted concept, social sustainability has been studied through the lenses of disparate disciplines and theoretical perspectives. It should be viewed both as a process that generates social health and well-being as well as the social institutions that facilitate environmental and economic sustainability. In this respect, businesses, provided that they are socially driven, have the power to play a crucial role in social sustainability; this study seeks to understand the contribution of these socially driven businesses – particularly micro and small enterprises – and socially driven innovations to achieving and ensuring social sustainability. The focus of this study is to tackle the intangible concept of social sustainability at a practical level, by presenting how socially driven businesses and innovations have the potential to address pressing societal needs and contribute to realising social sustainability.

This dissertation is divided into two parts. The first part introduces the background for the research as well as the literature, methodology and conclusions. The second part presents five sub-studies based on in-depth case studies; the results and conclusions of this dissertation are based on the findings of these five sub-studies. Each of the case studies selected for this dissertation is distinct in approach, context and level of analysis and answers a different aspect of the main research question. This dissertation is primarily qualitative in nature and makes use of a wide range of evidence: documents, semi-structured interviews, field observations, literature review and questionnaires.

This study makes three main contributions. Firstly, it contributes to the scientific discussion by providing empirical evidence about the connection between social sustainability and socially driven businesses and innovations. Secondly, it provides an opportunity to view sustainable businesses specifically from the vantage point of social sustainability where it not only recognizes the profitability and sustainability from the business perspective but also identifies the promotion of social sustainability towards
sustainable development. Thirdly, it clarifies how frugal innovation can be viewed as a practical approach to boosting social sustainability, as well as how the existence of social enterprises relates to social sustainability.

Keywords: social sustainability, socially driven business, socially driven innovation, frugal innovation, social enterprises.
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1 Introduction

1.1 Research background

Almost three decades have passed since the Brundtland Commission defined sustainable development as ‘development that meets the needs of the present without compromising the ability of future generations to meet their needs’. In doing so, the Commission pointed towards a concern for development considered fully from social, economic and environmental dimensions (United Nation’s World Commission on Environment and Development, 1987: p. 43). In order to comprehend this elusive concept of sustainable development, numerous attempts have been made to connect its three fundamental pillars: environmental, economic and social sustainability (Lozano, 2008; Vallance, Perkins and Dixon, 2011). Scholars are of the opinion that the relationships between these three dimensions remain unclear, and the social pillar is the least studied (Assefa and Frostell, 2007; Colantonio, 2011; Cuthill, 2009; Missimer, Robert, Broman and Sverdrup, 2010; Vifell and Soneryd, 2012). Nevertheless, there is a consensus that the social pillar is critical to sustainability discourse, and the other two pillars are intertwined with it (Colantonio, 2011; Murphy, 2012; Spangenberg and Omann, 2006). The social pillar of sustainability facilitates environmental and economic sustainability (Thomsen and King, 2009).

Businesses are embedded in society and thus have the power to play a crucial role in sustainable development (DeSimone and Popoff, 2000; Porritt, 2005). This role can be negative or positive, depending largely on the way a business is operated. On the one hand, the business world is viewed as largely negative, due to its detrimental impacts on society (see for example, Klein, 2000; Korten, 2000). On the other hand, researchers have argued that businesses do not set out with the intention to harm people or the environment, and that the unintentional, unavoidable harm they cause stakeholders can be avoided by employing strategies that can turn the business, its stakeholders, and the environment into winners (Elkington, 1994).

For some time now, businesses have been involved in improving eco-efficiency (Flammer, 2013) and environmental corporate social responsibility (CSR) (Ambec and Lanoie, 2008; Lindgreen and Swaen, 2010), as there is constant pressure to address a sustainable vision (Gupta, 2010). Firms have had dedicated departments dealing with CSR while their business strategies remained unaffected. Today, sustainability can no longer be an adjunct corporate function; it has to be embedded in the heart of a business, so that the variety of social challenges that are barriers to achieving sustainability can be addressed holistically (Fisk, 2010). This dissertation seeks to explore the role of socially driven businesses, particularly micro and small enterprises, and socially driven innovations that benefit society and help achieve and ensure social sustainability at an intrinsic, practical level.
1.2 Research gap in the literature

In order to understand the role socially driven businesses and innovations play in social sustainability, this dissertation draws on literature from the fields of social sustainability, social enterprise, sustainable business, social innovation and frugal innovation.

The literature on social sustainability is rather fragmented. Much social sustainability literature has emerged from the field of urban studies, from both academic and policy perspectives (e.g. Polese and Stren, 2000; Chiu, 2003; Cuthill, 2009; Colantonio, 2007; Colantonio, 2011; Dempsey Bramley, Power and Brown 2011; Mak and Peacock, 2011; McKenzie, 2004; Landorff, 2011; Spangenberg and Omann, 2006; Ghahramanpour, Lamit and Sedaghatnia, 2013). For the purposes of this dissertation, definitions, meanings and concepts of social sustainability have been derived from this tradition, even though this dissertation does not focus on urban development per se. Another substantial volume of literature that broadens understandings of the concept of social sustainability has been written from various other non-business-centred perspectives (e.g. Sach, 1999; Koning, 2001; Littig and Griessler, 2005; Vavik and Keitsch, 2010; Vallance et al., 2011; Boström, 2012; Vifell and Soneryd, 2012; Murphy, 2012). This literature describes the importance of social sustainability and how it fits into the overall concept of sustainable development without discussing any link to business.

There have also been discussions on how businesses could be more socially responsible. Scholars have extensively discussed CSR (see e.g. McGuire, 1963; Walton, 1967; Davis, 1973; Elkington, 1998; Carroll, 1999; McWilliams and Siegel, 2001; Bansal, 2005; Werther Jr. and Chandler, 2005; Dahlsrud, 2008; Fernando, 2010; Carroll and Buchholtz, 2009; Freundlieb and Tenteberg, 2013; Aagaard, 2016) and role of multinational corporations (MNCs) in sustainable development. However, small and medium sized enterprises (SMEs) have been relatively marginalized in the sustainability debate and ignored in academic research (Sanders and Wood, 2015). Current approaches have not focused on micro and small firms, and empirical research has not produced enough evidence about how such businesses can help in achieving social sustainability.

Furthermore, the notion of green and sustainable business has been widely discussed over the last decade, as in the work of DeSimone and Popoff, 2000; Fisk, 2010; Tueth, 2010; Weybrecht, 2010; and Soyka, 2012. This literature describes the link between business and sustainable development, but it does not explore the connection between business and social sustainability specifically. In most cases, this literature focuses on transforming a business into a ‘green’ business and effects on profitability, or incorporating sustainability principles into a firm’s everyday practices. One study that tries to bring social sustainability and sustainable businesses together was conducted by Thomsen and King (2009), who explored the impact of sustainable businesses on fostering social sustainability. The focus of their research, however, was limited to discovering business owners’ conceptions of social sustainability and actions that might be considered to foster social sustainability. One can state, then, that there is a lack of evidence about the roles socially driven micro and small businesses play in achieving social sustainability.
The notion of social enterprises has been discussed widely in the last decade, which is reflected in the work of Kerlin (2006), Mair and Martí (2006), Young (2008), Huybrechts and Nicholls (2013) and many others. This literature emphasises the contribution of social enterprises to society; however, it is also important to understand how social enterprises relate to social sustainability. Likewise, the literature on social innovation has been written from various perspectives (see for example, Phills, Deiglmieier and Miller, 2008; Manzini, 2014; Poll and Ville, 2009; Mulgan, Tucker, Ali, and Sanders, 2007; Hämäläinen and Heiskala, 2007; Howaldt and Schwarz, 2010). However, there is a need to understand how sustainability thinking and social innovation are linked, and this link has not been comprehensively addressed in the literature (Pisano, Lange and Berger, 2015) despite the fact that social innovation could be an important success factor in achieving social sustainability. Lastly, frugal innovation, considered by many as the future of innovation management (Zeschky, Winterhalter and Gassmann, 2014), has been a topic of discussion in innovation literature over the last decade. This is reflected in the work of numerous scholars (see for example, Tiwari and Herstatt, 2012a; Zeschky, Widenmayer and Gassmann, 2011; Zeschky, Winterhalter and Gassmann, 2014; Rajdou and Prabhu, 2014; Immelt, Govindarajan and Trimble, 2009; Bhatti and Ventresca, 2016; Radjou, Prabhu, and Ahuja, 2012; Govindarajan and Ramamurti, 2011; Prahalad, and Hart, 2002; Basu, Banerjee and Sweeney, 2013; Rao, 2013) who have studied various related concepts, such as reverse innovation, jugaad innovation, grassroot innovation, bottom of the pyramid (BoP) innovation, and so on. Most of this literature has not established any connection with sustainable development, despite the analysis this relationship deserves. Some work on this has been done recently (see for example, Levänen et al., 2016; Pansera and Sarkar, 2016; Hyvärinen, Keskinen and Varis, 2016; Shan and Khan, 2016), but there is still a need to understand more fully how social sustainability, in particular, is related to frugal innovation.

This survey of the existing literature makes plain that current approaches have not sufficed to provide much information on the contribution of micro and small-scale socially driven businesses and social and frugal innovations to social sustainability. This dissertation attempts to address this gap in the literature.

1.3 Research objective and scope

1.3.1 Research objective

This dissertation explores the concept of social sustainability from the perspective of socially driven businesses and innovations. The main objective of this study is to understand how socially driven businesses and innovations contribute to social sustainability. The main research question and sub-questions are:
How do socially driven businesses and innovations contribute to social sustainability?

a) How can socially driven businesses be sustainable and contribute to social sustainability?

b) How can socially driven innovation benefit society?

c) How does frugal innovation support social sustainability?

This dissertation tackles the intangible concept of social sustainability at a practical level by presenting how socially driven businesses and innovations have the potential to address pressing societal needs, thus realising social sustainability in part. The focus is on social sustainability, which is defined in this study as ‘both a) the processes that generate social health and well-being now and in the future and (b) those social institutions that facilitate environmental and economic sustainability now and for the future’ (Thomsen and King, 2009: p. 203).

1.3.2 Research scope

This research investigates the contribution of socially driven businesses and innovations to social sustainability in given communities. The study is cross-disciplinary, and the literature is derived from the fields of social sustainability and business.

Social sustainability has been studied from various disciplinary perspectives; understanding of the concept has been limited by disciplinary-dependent definitions (Colantonio, 2009). In recent years, urban sustainability and delivery of sustainable cities have been the main focal areas of social sustainability research. The focus of this study is not urban sustainability, urban regeneration, housing, sustainable cities or the policy discourse surrounding these topics. Nor does this study focus on social sustainability assessment methodologies, measurement tools and frameworks as viewed from any specific field of research. Instead, the focus is on social sustainability in practice, attained through socially driven businesses and innovations.

Similarly, this dissertation does not focus on CSR or the role MNCs and big businesses play in sustainability. Instead, the aim is to better understand the contribution of micro and small socially driven businesses and innovations to achieving social sustainability in both emerging markets and developed economies. The researcher has chosen cases from India and Finland and has conducted research in these two countries.
1.4 Definitions of key concepts

1.4.1 Sustainable business
Sustainable business means ‘balancing social, economic and environmental considerations in business decision-making, stewarding the natural resource base upon which the business depends, giving back to the communities in which business is done and promoting long-term value creation for the company’s investors’ (Sanders and Wood, 2015: p. 3).

1.4.2 Social enterprise
‘A social enterprise is any business venture created for a social purpose – mitigating/reducing a social problem or a market failure – and to generate social value while operating with the financial discipline, innovation and determination of a private sector business’ (Alter, 2007: p. 12).

1.4.3 Frugal innovation
In this study, frugal innovation means ‘products (both goods and services), processes, or marketing and organisational methods that seek to minimise the use of material and financial resources in the complete value chain (development, manufacturing, distribution, consumption and disposal) with the objective of reducing the cost of ownership while fulfilling or even exceeding certain pre-defined criteria of acceptable quality standards’ (Tiwari and Herstatt, 2012b: p. 4).

1.4.4 Social innovation
‘Social innovation is a novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals’ (Phills, Deiflmeier, and Miller, 2008: p. 36).

1.4.5 Socially driven innovation
In this study, a socially driven innovation is defined as a solution that generates social value. Encompassing both social and frugal innovations, socially driven innovations are seen as solutions and processes that generate social value and result in social health and well-being. Social innovations and frugal innovations have been studied as different concepts thus far; however, there are similarities between the two, and in this dissertation both are studied in relation to each other. The literature concerning ‘socially driven innovation’ is derived from the fields of frugal innovation and social innovation.
1.4.6 Socially driven business

In this study, a socially driven business is defined as a business that positively contributes to society by solving a certain pressing social problem; it may or may not have been established solely for that purpose. It is profit-oriented and generates revenue like a traditional business, but at the same time it also has the ability to address environmental and/or economic concerns alongside social ones.

The socially driven businesses considered in this dissertation are relatively small in size. Most fall into the micro and small categories, according to European Commission’s classification of SMEs (European Union, 2016). In Sub-study V, some cases of frugal innovation reflecting the trend of crossing sector boundaries are viewed as socially driven processes generating social health and well-being; in these cases the size of the organisation varies to include large organizations.

The concept of socially driven business encompasses two kinds of business activities: 1) those businesses established for a social purpose (in other words, social enterprises), and 2) those businesses that have a social outcome but may or may not have been established solely for a social purpose. In both cases, the businesses generate revenue and are profit centred.

When the work on this dissertation began, no suitable concept that possessed these dimensions existed. Therefore, for the purposes of this dissertation, the term socially driven business was coined alongside socially driven innovation, as both the concepts were considered necessary for this study. The literature concerning socially driven business and socially driven innovation is derived from the fields of sustainable business, social enterprise, frugal innovation and social innovation. For a more comprehensive discussion concerning the key concepts, please refer to the sub-studies presented in Part II of this dissertation. The sub-studies present a critical review of the specific concepts and deeply reflect upon the theoretical perspectives.

Figure 1 illustrates the relative position of socially driven businesses between traditional non-profit organisations (the innermost circle) and corporations practicing more or less social responsibility. The outermost circle represents traditional for-profit organisation. As we move from the innermost to outermost circle, the business activity becomes more profit oriented.
1.5 Structure of the dissertation

This dissertation is divided into two parts, Part I and Part II. Part I is an introductory section consisting of five chapters. Chapter 1 deals with research background, objective, scope, key concepts and dissertation structure. Chapter 2 discusses the theoretical framework. Chapter 3 describes the research methodology, including the research approach, research design and data collection and analysis. Chapter 4 presents the results and summarises the findings. Chapter 5 includes the conclusions and discussion.

Part II includes five sub-studies the results and conclusions of this dissertation are based on the findings of these five sub-studies.

Figure 2 presents the structure of the dissertation, including the five chapter heads in Part I and the titles of the sub-studies making up Part II.
Figure 2: Structure of the dissertation
2 Theoretical Background

2.1 Definitions of social sustainability

In scholarly discourse, social sustainability is considered a fundamental component of sustainable development and one that demands further elucidation, as its meaning remains unclear (Spangenberg and Omann, 2006; Davidson, 2009; Colantonio, 2011; Murphy, 2012, Littig and Griessler, 2005; Dempsey et al., 2011; Landorf, 2011; Mak and Peacock, 2011; Vifell and Soneryd, 2012). It is a multifaceted concept that has been studied through the lenses of disparate disciplines and theoretical perspectives (Colantonio, 2011; Weingaertner and Moberg, 2014). During the last fifteen years, studies on social sustainability have focused mainly on urban studies, from both academic and policy perspectives (Ghahramanpouri et al., 2013).

Many definitions of social sustainability have emerged, but as of yet no all-encompassing definition exists in policy or practice (Ghahramanpouri et al., 2013). Sachs (1999: p.27) states that ‘social sustainability must rest on the basic values of equity and democracy, the latter meant as the effective appropriation of all human rights – political, civil, economic, social and cultural – by all people’. From a sociological standpoint, Littig and Griessler (2005: p. 72) state that ‘social sustainability is given, if work within a society and the related institutional reproductive capabilities are preserved over a long period of time and the normative claims of social justice, human dignity and participation are fulfilled’. Polese and Stren (2000: p. 15-16) state that the ‘social sustainability of a city is defined as development that is compatible with harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups and encouraging social integration, with improvements in the quality of life for all segments of the population’.

One important focus of definitions of social sustainability is future generations: that improvement of a society should allow current and future generations alike to use social resources in a healthy way. According to the Western Australia Council of Social Services, ‘Social sustainability occurs when the formal and informal processes, systems, structures, and relationships actively support the capacity of current and future generations to create healthy and livable communities’ (McKenzie, 2004: p.18). Chiu (2003) expands on the notion of well-being of generations taken from Brundtland’s definition of sustainable development, describing social sustainability as the maintenance and improvement of the well-being of current and future generations. Castillo, Price, Moobela and Mathur (2007) suggest that social sustainability refers to ensuring the well-being of current and future generations by recognizing each individual’s right to belong to and participate as a valued member of his or her community.

Some authors suggest attributes of social sustainability instead of providing a definition. For instance, Magis and Shinn (2009: p.16) define four central constituent parts of social sustainability: human well-being, equity, democratic government, and democratic civil
society. Human well-being ensures the protection of basic needs; equity ensures mechanisms to guarantee equitable sharing of society’s benefits and costs; democratic government ensures that governance is oriented to the people; and a democratic society empowers people to build a democratic government. Bramley and Power (2009) suggest that a community’s social equity and sustainability are two recognizable overarching concepts at the core of the notion of social sustainability. Larsen (2009: p.78) states that ‘Social sustainability must a) build inclusion at the level of individuals, groups and society; b) provide for basic human dignity, which includes at least basic human sustenance, freedom from tyranny, freedom of association, and basic human liberty; c) provide a means for people to influence their governance and d) create the capacity for learning at the level of individuals, groups, collectives, governments, corporations and society’. Vallance et al. (2011: p.342) present a threefold schema for social sustainability that consists of a) development sustainability, which addresses basic needs, social capital and justice; b) bridge sustainability, which concerns changes in behaviour so as to achieve environmental goals; and c) maintenance sustainability, which refers to preservation of socio-cultural characteristics in the face of change, and the ways in which individuals accept or resist those changes. According to McKenzie (2004: p.19), a socially sustainable community is equitable, diverse, connected, and democratic and provides a good quality of life. In a more recent study, Missimer, Robert and Bromman (2016) state that in a socially sustainable society, people are not subject to structural obstacles to health, influence, competence, impartiality and meaning-making.

Social sustainability is also viewed as a process. According to McKenzie (2004: p.12), social sustainability is a life-enhancing condition and process within communities, which can achieve that condition through several factors like equity of access to key services, diversity, political participation at the local level, transmitting awareness of social sustainability from one generation to the next, mechanisms of community to fulfil its own needs, and so on. ‘Social sustainability concerns how individuals, communities and societies live with each other and set out to achieve the objectives of development models they have chosen for themselves, also taking into account the physical boundaries of their places and planet Earth as a whole’ (Colantonio and Dixon, 2011: p. 4). An approach adopted by Thomsen and King (2009) that is relevant in the context of this study defines social sustainability as social institutions that work towards economic and environmental goals as well as processes that generate social health and well-being.

2.2 Business and social sustainability

Most prior research on social sustainability has been carried out in the field of urban studies; little study has been done on social sustainability as it applies to business (Pfeffer, 2010).

Nevertheless, there has been broad discussion about the social role of business thus far (see e.g. McGuire, 1963; Carroll, 1999; Frederick, 1994; McWilliams and Siegel, 2001,
Lindgreen and Swaen, 2010; Du, Bhattacharya, and Sen, 2010; Yunus, 2011). Hart (1997: p.76) pointed out two decades ago that the ‘responsibility for ensuring a sustainable world falls largely on the shoulders of the world’s enterprises, the economic engines of the future’. Hitchcock and Willard (2009), on the other hand, suggest that a business cannot be responsible for making all of society sustainable, but can critically examine its inputs, outputs, processes and effects on the larger system in which it operates. If, in doing so, it incorporates sustainability practices, it could bring about positive change in society while improving its own market performance (Flammer, 2013). It has been argued that businesses can become more sustainable (i.e. green) and that such greening initiatives influence financial performance (see e.g. Ambec and Lanoie, 2008; Berchicci and King, 2007; Rusinko, 2007), which may not be the only motivation for a business to go green. Other motivating factors could be competitiveness, legitimation and ecological responsibility (Bansal and Roth, 2000). In addition, businesses are facing increased pressure to become greener (Pfeffer, 2010; Ambec and Lanoie, 2008). During the last decade, the term triple P – people, planet, profit – has been coined to highlight the need to focus on the social, environmental and economic dimensions of a business in order to support sustainability goals (Elkington, 1994; Henriques and Richardson, 2004; Kolk, 2010; Fisk, 2010). Therefore, a business operation is sustainable if it is capable of simultaneously meeting economic, social and environmental goals (Piercy and Rich, 2015). This leads to an increased understanding of a systemic approach to business sustainability (Haywood, Nel and Trotter, 2010).

Businesses have the potential to play a strong role in achieving sustainability, especially social sustainability. The social dimension is as important as environmental or economic dimensions in maintaining business sustainability (Tueth, 2010). Companies are currently placing greater focus on social sustainability due to a shift in stakeholder pressures from environmental to social concerns (Holliday, Schmidheiny and Watts, 2002), which rose to the fore only after Triple Bottom Line (TBL) terminology became prominent in reporting discourses (Brown, Dillard and Marshall, 2006). However, the amount of work carried out regarding social sustainability, as it applies to business, has been limited to date (Visser and Sunter, 2002, Bebbington and Dillard, 2009, Pfeffer, 2010). More research that investigates this link should be conducted in order to fully address sustainable development (Hutchins and Sutherland, 2008; Pfeffer, 2010) and, more importantly, its social dimension.

As a concept, social sustainability covers broad societal issues (Suopajärvi, Poelzer, Ejdemo and Klyuchnikova, 2016) and has various interpretations in different fields (Vasquez and Klotz, 2013). With regards to business, social sustainability means enterprises add value to their communities by increasing the human capital of individuals and furthering the societal capital of communities (Dyllick and Hockerts, 2002). A socially sustainable business is understood more generally as a business that influences individuals’ or society’s well-being (Huq, Stevenson, and Zorzini, 2014; Geibler, Liedtke, Wallbaum, and Schaller, 2006) or, in other words, a system that meets the expectations of stakeholders without causing harm to the well-being of society and its
members (Lindgreen, Antioco, Harness and van Sloot, 2009). Here, the idea of social sustainability is commonly interpreted as the ability to continue to stay in business through good relations with stakeholders (Brown, Dillard and Marshall, 2006). Social sustainability is related to how we make choices that affect other humans in our global community by, for example, promoting sustainable consumption and production (Tseng, Chiu, Tan and Siriban-Manalang, 2013) including simple choices like selecting socially sustainable suppliers (Ehrgott et al., 2011; Huq, Stevenson and Zorzini, 2014), processes and product design, green energy, waste disposal and so on (Hitchcock and Willard, 2009). Social sustainability is not limited to fair labour practices; it also encompasses improving social conditions in local communities and increasing equity in the society within which it operates (Vachon and Mao, 2008). It covers the broadest aspects of business operations and the effect they have on employees, suppliers, investors, local and global communities and customers (Vavik and Keitsch, 2010). The debate on social sustainability also encompasses product sustainability as viewed through the life-cycle perspective (Benoit and Mazijn, 2009; Benoit et al., 2010; Labuschagne and Brent, 2006); supply-chain, end-consumer products and their use and disposal are thus part of the product-related social sustainability discussion (Weingaertner and Moberg, 2014).

It has been argued that businesses adopt top-down approaches to assessing sustainability (Magee et al., 2013) and sometimes create fake reputations regarding their level of sustainability (Nunes and Park, 2016). According to Labuschagne, Brent and van Erck (2005), the indicators used to measure sustainability in an overall business do not effectively address social criteria. They propose a comprehensive framework consisting of four primary criteria to measure the social sustainability of a company’s operations: internal human resources, external population, stakeholder participation and macro-social performance. Other scholars have attempted to address this problem by devising other suitable standards for assessing social sustainability. For example, McElroy, Jorna and Engelen (2008) have proposed a social footprint method to quantitatively measure and report on corporate social sustainability. Another, more general, set of standards has been proposed by Thomsen and King (2006) based on their evaluation of the best business practices of sustainable businesses. These standards include workplace practices, work-life balance, retirement benefits, healthcare benefits, safe workspaces, stable housing, support services for children, support for employees in their non-work lives, training and support for the larger community.

A business can facilitate social sustainability provided they fulfil the criteria for a socially sustainable business. As early as 1995, Gladwin, Kennelly and Krause represented a neutralist conception of a socially sustainable business. According to them, ‘it is a business which causes no direct or indirect net loss of social capital, human rights, human capital and basic fulfilment for both its employees and community where it operates’. Kira and van Eijnatten (2008) offer an interesting chaordic systems thinking approach in order to promote the social sustainability of an organisation whereby the organisation has to be understood as a holon (simultaneously a whole and a part) system in which
development can only take place when the members of the organisation also grow in their interior and exterior complexities.

A socially sustainable business solves the pressing needs of a given society and ensures that healthy relationships are maintained with all stakeholders, including employees, customers and community members. Stakeholder management is, thus, crucial for a business in its pursuit of achieving sustainability (Steurer, Langer, Konrad and Martinuzzi, 2005). An interesting study by Galuppo, Gorli, Scaratti, and Kaneklin (2014) has shown that building a socially sustainable business requires the management of often-conflicting multi-stakeholder processes, supporting the notion that a socially sustainable business can contribute to the worthy goal of sustainability by crafting a ‘desirable future state for all stakeholders’ (Funk, 2003). It incorporates sustainability principles into everyday practices (Fisk, 2010) that pay off in the longer run by influencing perceptions of the products the business offers in the eyes of decision-making stakeholders (Lindgreen et al., 2009) and customers.

An exploration of the prior literature on the social role of business indicates that most of the literature deals with large business institutions and their role in achieving sustainability. The role of micro and small businesses and their responsibility in terms of social sustainability has been neglected. Furthermore, the social role of business has been studied under various frameworks, including social responsibility, CSR, stakeholder management, TBL, social sustainability, sustainable business, socially sustainable business, social life cycle assessment of products (S-LCA), impact investment and so on. Some of these terms have been used interchangeably (Hutchins and Sutherland, 2008), and a discussion of each of these concepts is beyond the scope of this dissertation. Some conceptual overlap may arise in this dissertation, as social sustainability is closely related to the above-mentioned concepts and the literature dealing specifically with the role of business in social sustainability is not well developed. Therefore, an amalgamation of concepts, including social innovation, frugal innovation, social enterprise and sustainable business are explored in this study in order to understand the role of socially driven business and socially driven innovation in social sustainability.

### 2.2.1 Social innovation

According to Tidd, Bessant and Pavitt (2005), innovation is a process of turning opportunities into new ideas and putting these new ideas into widely used practice. Many different types of innovation have been identified in the literature: product innovation, process innovation, service innovation, incremental innovation, radical innovation and so on. One such type of innovation is social innovation. The term social innovation entered the innovation literature swiftly; however, there is much debate over its relevance and meaning (BEPA, 2010). Social innovation has not been explored extensively as a research area (e.g. Mulgan, Murray and Grice, 2010; Marcy and Mumford, 2007); however, concepts related to social innovation have been discussed by great minds like Peter Drucker and Michael Young as early as 1960s. The literature on social innovation draws
mainly from economics, management studies, business and technology innovation and social anthropology, sociology and politics (BEPA, 2010). This field is advancing rapidly, and there is a growing interest in this subject worldwide (Howaldt and Schwarz, 2010; Manzini, 2014). According to Goldenberg (2010), social innovations have been embraced by the private sector in recent years due to greater consumer social awareness, CSR or TBL, and by the non-profit sector due to their adoption of ‘business-like’ practices as they seek profits to finance their social missions. Social innovation usually describes the processes of invention, diffusion and adoption of new services or organisational models, whether in the non-profit, public or private sector.

Social innovation is a broad concept (Pot and Vaas, 2008) and widely used; however, it is also ambiguous and allows for many interpretations. It does not have fixed boundaries; it cuts across all sectors and very diverse fields (BEPA, 2010). It has been interpreted in various overlapping ways in different disciplines (Pol and Ville, 2009). Despite numerous interpretations, social innovation is generally seen as any development that benefits a society and helps it achieve social needs.

Social innovation has been defined in many ways. In the broad context, a social innovation could be defined as a ‘public good’ benefiting people or the Earth (Centre for Social Innovation, 2010) or improving the macro-level quality of life or extending life expectancy (Pol and Ville, 2009). Therefore, social innovations are seen as solutions to the world’s complex socio-ecological problems. Social innovation is also defined as a change in ways of thinking: changes in mental models and institutional and social norms that increase the society’s capacity for renewal; novel solutions to social problems with societal value (Phills et al., 2008). In a somewhat narrower sense, social innovations are defined as changes in the cultural, normative or regulative structures of society that enhance a society’s collective power resources and improve its economic and social performance (Hämäläinen and Heiskala, 2007). Another interesting way to understand social innovation is through the theory of connected difference, which emphasises three key dimensions of social innovations. Firstly, these are new combinations, rather than completely new innovations. Secondly, their practice involves cutting across organisational or disciplinary boundaries, and lastly, they leave behind compelling new social relationships between previously disparate individuals and groups (Mulgan et al., 2007). Mulgan (2006) defines social innovation as innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly diffused through organisations whose primary purposes are social.

Social innovation is oriented towards making a change at the systemic level (Pol and Ville, 2009; Westley and Antadze, 2010). Not all social innovations are system innovations, however, as they may occur at micro- (social demand perspective), meso- (societal challenge perspective) or macro-level (systemic change perspective) (Hubert, 2010). Social innovation does not necessarily involve a commercial interest, although it does not prevent such interest. According to Osburg and Schmidpeter (2013), social innovation could be seen as a key driver for business success, as the organisations that are able to develop business solutions to the most urgent social and ecological challenges
will be the leading companies of tomorrow. It has been noted that not all innovations are desirable (see for example, Poll and Ville, 2009); many have proved to have little social value at best and to be socially disastrous at worst (Hubert, 2010). Therefore, there is a need to favour innovations with high social value that can help overcome the social challenges faced by our society.

Sustainability thinking and social innovation go hand in hand, and an apparent link exists between the two. However, this link has not been comprehensively addressed in the research (Pisano, Lange and Berger, 2015). Social innovations prioritise human welfare and working towards a sustainable society. Sustainable development involves changes in the behaviour of individuals, institutions and organisations (Dobson, 2007). This shift has been seen recently, which has resulted in the rapid surge of social innovations (Phills et al., 2008; Manzini, 2014). According to Manzini (2014), social innovations will be more common in the near future due to the much-needed transition towards sustainability. He stresses that sustainability necessitates social rather than merely technological innovations, as it will always require consideration of a system in its entire social, technological, and natural complexity.

It appears that socially sustainable thinking and increased social awareness can eventually lead to various social innovations. Therefore, social innovation is a critical success factor towards achieving sustainable development. However, in order to achieve this goal, systemic thinking has to be incorporated, and a synergistic attempt has to be made by various actors—producers, service providers, institutions and organisations across the non-profit, public and private sectors.

2.2.2 Frugal innovation

Frugal innovation refers to ‘an ability to do more with less by creating more business and social value while minimising the use of resources such as energy, capital and time’ (Radjou and Prabhu, 2014). It is considered to be the future of innovation management (Zeschky, Widenmayer, and Gassmann, 2011). Frugal innovation takes place in contexts of severe resource constraints and involves high-quality, reasonably priced products or services available even to customers with modest lifestyles. Frugal innovations are ‘good-enough, affordable products that meet the needs of resource-constrained consumers’ (Zeschky et al., 2011: p. 38). Frugal innovation is generally viewed as low-cost innovation, but it is much more than that: frugal innovation rethinks the nature of innovation. It uses the concept of simplification and strives for less instead of more through the use of clever technology. Frugal solutions are characterised by affordability, robustness, user-friendliness, scalability and an attractive value proposition (Tiwari and Herstatt, 2012a). Frugal innovations are considered potentially disruptive and transformational (Woolridge, 2010), not only for emerging markets, but for developed markets as well (Immelt, Govindarajan and Trimble, 2009).

As a term, frugal innovation can act as an integrating mechanism for bringing various concepts, like reverse innovation (Govindarajan and Ramamurti, 2011; Zeschky,
Winterhalter and Gassmann, 2014), jugaad innovation (Radjou, Prabhu, and Ahuja, 2012), BoP (Prahalad, and Hart, 2002), grassroots innovation (Smith and Fressoli, 2014) and inclusive innovation (George, McGahan, Prabhu and Macgahan, 2012) under one umbrella (Tiwari and Herstatt, 2012b). It also shares certain, if not all, characteristics of disruptive innovation (Hart and Christensen, 2002) and lean innovation (Schuh, Lenders and Hieber, 2011).

Frugal innovation is also known as jugaad innovation. Jugaad is a Hindi word that means creative improvisation (thinking in a frugal way and being flexible), which requires quick adaptation to uncertain circumstances in an intelligent way (Radjou, Prabhu and Ahuja, 2012; Bobel, 2012; Sharma and Iyer, 2012). However, this term has a negative connotation among innovation scholars due to its meaning – a simple workaround – and its usage in contrast to the mainstream innovation process (Birtchnell, 2011, Krishnan, 2010). Jugaad innovation is characterised by limited-resource, low-cost innovations that are sustainable for the environment and communities. It is a way of survival for BoP consumers (Singh, Gupta and Mondal, 2016).

The terms frugal innovation and reverse innovation are often used as synonyms. Even though they are interrelated (Simula, Hossain and Halme, 2015), a difference exists between the two. Agarwal and Brem (2012) make the distinction that frugal innovation involves designing solutions specifically for low-income market segments, while reverse innovation involves new products developed in emerging markets that are then modified for sale in developed countries. ‘The development of frugal product innovation capabilities is a critical success factor in the development of reverse innovation’ (Zeschky, Widenmayer and Gassmann, 2014: p. 255).

While discussing frugal innovation, the BoP deserves attention. The BoP refers to the largest, generally poorest segment of the world’s population, which constitutes the estimated four billion people in the developing world who live on less than $2 per day (Prahalad, 2010). BoP markets are uncertain, volatile (Choi et al., 2010) and characterised by institutional voids (Mair, Marti and Ventresca, 2012). However, the BoP has the potential to offer opportunities to create value for both companies and the poor (Pitta et al., 2008; Mahajan, 2009; Mahajan, Banga and Gunther, 2006). Prahalad and Hart (2002) suggest that it is possible to profit from the poor by treating them as self-respecting customers. The poor should, then, be seen as producers (Karnani, 2007) and co-producers of innovation (London, 2009; London and Hart, 2004), entrepreneurs and/or innovators (Pansera and Sarkar, 2016; Hall, Matos, Sheehan and Silvestre, 2012), not mere receivers. Developing frugal innovations for the BoP market requires ingenuity and vision. Be it through a multinational corporation or social enterprise, a non-governmental organisation (NGO) or SME, any kind of entrepreneurial activity at the BoP can help eradicate poverty in an economically feasible way (Paton and Halme, 2007) if the environment is conducive to meeting certain success criteria (Pervez, Maritz and De Waal, 2013). It requires an environment that begins with a) understanding the fundamental needs of the BoP population, b) creating an entrepreneurial eco-system that involves partnerships with
other companies and the public sector and c) nurturing an ‘innovation sandbox’ that encourages new ideas (Prahalad, 2006).

Over the years, the BoP concept has provided a new direction in corporate thinking (Agnihotri, 2012). There has been a lot of discussion around the poor donning different hats as consumers, entrepreneurs (Gupta, 2010; Gupta, 2012), producers or suppliers (Kolk, Rivera-Santos and Rufin, 2013; Mair et al., 2012). However, the view of the poor as value-conscious consumers and creative entrepreneurs in the BoP model has been subject to intense criticism, including arguments that it ‘presents a romanticized view of the poor, grossly underemphasises the critical role and responsibility of the state in poverty reduction and ignores the vulnerability of the poor and underemphasises the employability of the poor’ (Karnani, 2011; Karnani, 2007), ‘obscuring unequal power relations at different societal levels and painting an optimistic picture of win-win outcomes’ (Arora and Romijn, 2011: p. 482).

Frugal innovation is capable of the creation of social value. Frugal solutions boost the standard of living of individual communities to the next-better level (Tiwari and Herstatt, 2012a). According to Basu, Banerjee and Sweeny (2013: p. 64), ‘Frugal innovation is a design innovation process in which the needs and context of citizens in the developing world are put first in order to develop appropriate, adaptable, affordable and accessible services and products for the emerging markets’. The frugal mindset was created in emerging markets, especially India and China. Some scholars consider India to be the leading market for frugal innovation (Tiwari and Herstatt, 2012a), while others are of the view that India’s potential as a ‘laboratory for frugal innovations’ is over-rated (Prathap, 2014). Emerging markets have witnessed the frugal mindset due to a lack of service provision, which stimulated the demand for low-cost solutions (Bound and Thornton, 2012).

The concept of frugal innovation is gaining momentum as business-industry experts and scholars have realised that a frugality mindset will benefit firms operating in emerging markets and/or the developed world. Frugal innovations are becoming popular in developed economies due to their lower costs and no-frills structure (Rao, 2013). Frugal innovators have to devise low-cost strategies for handling resource limitations when innovating, developing and delivering products and services to low-income users in emerging markets, where affordability, resources and institutional constraints exist (Bhatti, 2012). They need to build innovation capabilities by creating an innovation process that overcomes ‘the deficiency problem’ in generating cheaply priced original products (Lim, Han, and Ito, 2013). Poor customers in rich countries also need to be served; to do so, a frugal mindset associated with BoP strategies must be instilled in firms’ business models (Angot and Ple, 2015). There are many reasons for the developed world to embrace frugal innovations: a) slow growth in developed economies, which will increase demands for frugal innovations; b) environmental constraints, which will increase demands for more frugal models of production and consumption; c) caring for rapidly aging societies, which will require new and frugal approaches to health and social
According to the literature, frugal innovation would, thus, harness frugality and improve profitability in a world conscious of costs and sustainability, help build capacity for people to escape poverty and deprivation, raise standards of living, put the needs of poor citizens first, and promote social inclusion by innovating for the margins of society, thereby closing the gap between the world’s rich and the world’s poor.

2.2.3 Social enterprise

While pursuing social sustainability through business, social enterprises rise to the forefront. In the current funding climate, when support from traditional, philanthropic and government sources is declining, social enterprises have stood out in their quest for sustainability. Social sustainability lies embedded at the core of every social enterprise. A social enterprise can positively contribute to society, as its purpose is to achieve a desired social change. The development of a social enterprise could be seen as a small step towards realising social sustainability. Social enterprises are perceived as a source of new solutions to stubborn, long-standing social problems. For example, the European Union envisions social enterprises as facilitating better inclusion of workers and consumers and producing ‘laboratories’ of social innovations (European Union, 2012). Social enterprises have thus far contributed to solving wicked social problems like social exclusion, injustice and poverty as well as environmental problems that other bodies, such as traditional private, public, voluntary or community mechanisms have, despite their efforts, been unable to solve (Shaw and Carter, 2007). They pursue social missions or purposes to create community benefit with various degrees of financial self-sufficiency, innovation and social transformation (Brouard and Larivet, 2011).

The concept of social enterprise is ambiguous, and numerous definitions have been offered in the literature (Bacq and Janssen, 2011; Dacin, Dacin and Matear, 2010). According to Gould, ‘A social enterprise is a business dedicated to a social mission, or earning a profit for the financial furtherance of a social mission’ (2006: p. 5). Social enterprises have been viewed as an innovative approach to tackling social needs, solving persistent social problems and promoting social inclusion while providing a source of revenue for socially oriented activities (Defourny and Nyssens, 2006; Kerlin, 2006). Social enterprises can be seen as one outcome of social entrepreneurship (Mair and Martí, 2006). They have been regarded as distinct new entities compared to traditional for-profit and non-profit operations, combining the diverse elements of social purpose with the market orientation and financial performance standards of business (Young, 2008). They are also viewed as organisations that can be structured like a traditional non-profit organisation, for-profit organisation, cooperative or charity; however, they are focused on addressing social issues (Borzaga and Defourny, 2001). Social enterprises combine business logic and social goals, and this characteristic distinguishes them from traditional
for-profit or non-profit activities (Borzaga and Defourny, 2001; Huybrechts and Nicholls, 2013).

Dart (2004) refers to social enterprises as hybrid organisations operating between the more clearly defined non-profit, market and state sectors. This hybrid nature of social enterprises provides an opportunity to draw upon the resources of multiple stakeholders to achieve social, economic and environmental goals (Campi, Defourny and Gregoire, 2006). Being perceived as social enterprise is in itself a positive factor, which can demonstrate organisational legitimacy (Dart, 2004).

Social enterprises can also be seen as a way of catalysing social transformations that reach well beyond any solutions to the initial problems. According to Alvord, Brown and Letts (2004), social enterprises may create innovative solutions to immediate social problems and mobilize ideas, capacities, resources and social arrangements required for sustainable social transformations. Social enterprises are rather small-sized, act at the local level and depend on public funds. The development of a social enterprise is influenced by external barriers and driving forces, such as legal and taxation frameworks, public policies and budgets, demographic developments and unemployment rates (Heckl, Pecher, Aaltonen and Stenholm, 2007).

Social enterprises cannot be defined by legal form, sector of activity or any other fixed criteria, and it is almost impossible to obtain cohesive, comprehensive statistical information about this sector (Heckl et al., 2007). Social enterprises have been conceptualised in different ways in different countries, as legal and political positions vary across countries, which can have an impact on the way a social enterprise is set up and funded (Kerlin, 2006). This influences the ways social enterprises can be evaluated or compared to one another, which makes them challenging target areas for research.

The definition used by the Social Enterprise Research Network EMES (Figure 3) is a comprehensive definition that facilitates understanding of social enterprises and distinguishes between criteria that are more economic in nature and indicators that are predominantly social. This distinction between types of criteria resonates with the notion that social enterprise is constituted both ‘discursively’ to solve wicked problems innovatively and ‘materially’ to perform efficiently in its sphere of operations. These indicators have been further divided into subsets for comparative purposes, three of which are ‘economic and entrepreneurial criteria’, ‘social criteria’ and ‘participatory governance’ (Defourny and Nyssens, 2012). According to Defourny and Nyssens (2012), it is appropriate to focus on these three subsets, as doing so allows highlighting particular forms of governance specific to the EMES ideal of a social enterprise. They include the criteria b, g and h below.
The European Union has supported social enterprises alongside local governments in Western European countries. In terms of public policy and financing, much of the government support is narrowly focussed on work integration social enterprises (WISEs) and is often targeted at and limited to start-up initiatives to make up for the temporary unemployability of disadvantaged persons in labour markets (Kerlin, 2006). In Finland, social enterprises can be divided into the following two categories: (1) WISEs that offer...
employment to the disabled and the long-term unemployed, and which are provided for by law (Act on Social Enterprises, 1351/2003), and (2) organisations that have adopted a social enterprise business model and are therefore eligible for the social enterprise mark (Finnish Ministry of Employment and the Economy, 2011). For example, in 2016, there were 43 enterprises in Finland that were granted the social enterprise mark and approximately 160 companies registered as WISE. A report published by Finland’s Ministry of Employment and the Economy estimates that 4% of SMEs in Finland (which means roughly 8000 companies) could fulfil the social enterprise criteria used in the UK (Finnish Ministry of Employment and the Economy, 2011).

Rinkinen, Oikarinen and Melkas (2016) suggest in a recent study that there is a need for better inclusion of social enterprises in Finland’s innovation systems and communicating this need through regional strategies would help develop social enterprises and have them perceived as potential innovators contributing to sustainable development.

2.2.4 Sustainable business

According to the World Council for Economic Development, for any development to be sustainable, the most important issues that need to be addressed are social equity, economic prosperity and environmental quality (Soyka, 2012). Therefore, we can suggest that a business is sustainable when it incorporates these three pillars of sustainable development in its operations and attempts to strike a balance between them. However, it is no easy task to operationalize the concept of sustainable development (Robinson, 2004), especially in relation to business (Bansal, 2005; Stubbs and Cocklin, 2008; Wells, 2013). Doing so requires a holistic view that reflects the nature of sustainability within the context of business (Kopnina and Blewitt, 2015). The importance of stakeholders in terms of seeking sustainability has been discussed by many authors (see for example, Funk, 2003; Brown, Dillard and Marshall, 2006; Lindgreen et al., 2009; Galuppo, Gorli, Scaratti and Kaneklin, 2014). According to Aagaard (2016: p. 21), ‘when companies pursue sustainable business, the primary objective of the company is not to make money in the short run, but to achieve sustainable success in the long run through the satisfaction and involvement of its stakeholders, who get a central role in the definition and development of company’s strategy, core business and product services’.

By and large, a sustainable business is understood as an environmentally sound business. When discussing the characteristics of a sustainable business, many authors have emphasised the need to reduce ecological imbalances and promote environmentally friendly technologies. Hart (1997) has referred to three strategies that should be employed by sustainable businesses: 1) pollution prevention: prevent pollution by minimising emissions, effluents and wastes; 2) product stewardship: minimise the adverse environmental effects associated with the full life-cycle of products; and 3) clean technology: use of technology that creates no harmful emissions or waste. Doranova, Griniece, Miedzinski and Reid (2012) mention that a sustainable business promotes green
technologies, improves the business environment and attempts to reach environmental objectives, like decreasing carbon intensity, protecting the environment, reducing emissions and preventing loss of bio-diversity. DeSimone and Popoff (2000) highlight the importance of eco-efficiency in a sustainable business, which means ‘the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life-cycle to a level at least in line with earth’s carrying capacity’. Van Rosing, Hove and von Schee (2012) note that a sustainable business participates in environmentally friendly activities and ensures that all the processes, products, and manufacturing activities adequately address current environmental concerns while maintaining a profit. Further, Cooney (2009) adds that principles of sustainability should be incorporated into each business decision, and the business should provide eco-friendly products or services, be greener than the traditional competition and make a long-term commitment to environmental principles in its business operations.

Another approach to understanding sustainable business is TBL, which is referred to as the three-legged stool of people, planet and profit (Elkington, 1997) and acknowledging that balancing these three dimensions to meet our needs today will have a large impact on future generations (Doane and MacGillivray, 2001; Fisk, 2010). Sustainable business is much more than green or environmental business; it also encompasses the social and economic dimensions that are equally significant in maintaining the sustainability of a business (Tueth, 2010). These three dimensions represent the three basic pillars of sustainable business.

According to Tueth, an authentic sustainable business contains six essential characteristics: 1) A triple top-line (TTL) value proposition including profits for the company, natural world betterment and social advantages for the community; 2) Nature-based knowledge and technology to be used in the business; 3) Gradual reduction of products of service and their replacement with products of consumption; 4) Utilising green-energy technologies like solar, wind, geothermal and ocean energy; 5) Locally operated businesses and organisations collaborating together, giving rise to healthy communities; 6) Continuously improving the business by intensifying TTL value production (2010).

Businesses today require a better understanding of all operational aspects and their interconnectedness to the social and environmental interface in which they operate. Shifting to a sustainable business also requires alterations to business models and business model innovations (Aagaard, 2016). A sustainable business adopts sustainability into its everyday practices (Weybrecht, 2010) rather than treating it as a mere tool for enhancing the company’s reputation (Fisk, 2010). Accountability becomes a critical element in all sustainable business operations (Aagaard, 2016), and more informed decisions and choices have to be made in order to achieve long-term sustainability (Haywood et al., 2010). By switching to a sustainable business, a company can have tremendous positive benefits, which include monetary gains incurred from increased resource efficiency and
lower energy and water consumption (Cramer, 2005), customer loyalty gained through a better company image (Maignan and Ferrell, 2004), risk reduction caused by the adoption of sustainable supply-chain networks (Walker, Sisto and McBain, 2008), improved employee well-being (Mirvis, 2012) and so on. Making a business sustainable therefore requires analysing the dynamics of the interrelations between the ecological and social systems (Haywood et al., 2010).

Sustainable businesses thus employ sustainable strategies in order to positively affect society, business growth and the environment. A sustainable business creates profits and contributes to a healthy environment and improved communities and may thus be defined as ‘a business which incorporates the three pillars of sustainable development: social equity, economic prosperity and environmental accountability in its everyday practices and understands how to address these challenges holistically in order to create a better world’ (Fisk, 2010; Tueth, 2010; Weybrecht, 2010; Sanders and Wood, 2015).

2.3 Summary

The literature presented above presents ways of understanding the role of business in sustainability and the relationship between business and sustainability. However, this relationship has typically been studied in large companies; there has not been enough focus on micro and small firms, and empirical research has not produced enough evidence on how these smaller businesses can achieve social sustainability. There is also a lack of evidence, especially about the role of socially driven businesses and innovations, in achieving social sustainability. The reason for this ambiguity is due to the fact that earlier research examined the subject matter through a single research field and lacked a cross-disciplinary approach that could have provided a better understanding of this concept. In order to understand how socially driven businesses can contribute to social sustainability, these concepts need to be viewed as a whole, with literature on social sustainability on the one hand, and literature that fosters understanding of socially driven businesses, like social enterprises and sustainable businesses, and socially driven innovations, like social innovation and frugal innovation, on the other.

The motivation for bringing these concepts together into an overarching synthesis is that they are all concerned with sustainability and social issues. This leads us to consider the interrelations between these concepts and their characteristics; and in this case to understand them in the specific context of micro and small sized businesses. Figure 4 presents the basis of the literature surveyed in this context.
In terms of this dissertation, the social sustainability literature focuses on the maintenance and improvement of well-being for current and future generations. The social enterprise literature emphasises how a business could be established with a social purpose as a primary goal. A sustainable business perspective is used to illustrate the way a business should operate in order to achieve the broader goal of sustainable development. The theory of social innovation is used to understand the need for novel ideas and solutions that are more effective than current solutions in achieving a desired social change. The literature about frugal innovation helps explain how to do more with less by creating more business and social value while minimising the use of resources in a world conscious of sustainability demands. All these theoretical perspectives share a common sustainability viewpoint and attempt to move a step closer towards the larger goal of sustainable development.
3 Research Methodology

3.1 Research approach

Epistemology and ontology serve as the foundations of research. Epistemology is concerned with what we can know about reality and how we can know it (Willis, 2007). Epistemology concerns what is or should be regarded as acceptable knowledge in a discipline (Bryman, 2016; Saunders, Lewis and Thornhill, 2009). Ontology is concerned with the nature of reality (or being or existence). Ontology is about what can exist or what is real (Willis, 2007). According to Bryman (2016), ‘the central point of orientation is the question of whether social entities can and should be considered objective entities that have a reality external to social actors, or whether they can and should be considered social constructions built up from perceptions and actions of social actors. These two positions are referred to respectively as objectivism and constructionism. Objectivism is an ontological position that implies that social phenomena and their meanings have an existence that is independent of social actors. Constructionism is an ontological position that asserts that social phenomena and their meanings are continually being accomplished by social actors’. Epistemological and ontological assumptions strongly influence the way research is carried out (Bryman, 2016) and inform the theoretical perspective of the research (Crotty, 1998). The research philosophy that the researcher adopts contains these assumptions, which decide the research strategy and the methods (Saunders, Lewis and Thornhill, 2009).

According to Saunders et al. (2009), there are four main research philosophies in management research: positivism, realism, interpretivism, and pragmatism. Positivism assumes that application of the scientific method is the only way to discover truth about the world (Willis, 2007). Realism is related to positivism in that it also assumes a scientific approach to the development of knowledge; realism also assumes that an external reality is separate from our descriptions of it (Godfrey-Smith, 2003) but that it is interpreted through social conditioning (Saunders et al., 2009). Interpretivism assumes that reality is socially constructed, subjective and multiple (Saunders et al., 2009). It proposes that we abandon the search for generalisable truths and laws about human behaviour and concentrate on local understanding (Willis, 2007). Pragmatism is closely related to interpretivism. Pragmatists consider truth to be ‘what works’ (Tashakkori and Teddlie, 1998). Pragmatism is a practical approach, integrating and seeing compatibility between varied perspectives (Tashakkori and Teddlie, 1998; Saunders et al., 2009).

Another important element to be considered in scientific research is the selection of a research approach: deductive or inductive (Bryman, 2016). With deduction, a theory and hypothesis are developed and a research strategy is designed to test the hypothesis, whereas with induction, data is collected and a theory is developed as a result of the data analysis (Saunders et al., 2009). A third approach, called abductive reasoning, is seen as a way of combining deduction and induction. The abductive approach, commonly
referred to as ‘inference to the best explanation’, is reasoning from given data to a hypothesis that explains the data (Walton, 2005).

From a methodological point of view, a study can be categorised as either quantitative or qualitative. Quantitative and qualitative research differ in epistemology and ontology (Bryman, 2016). Quantitative research takes a deductive approach, is often associated with a positivistic perspective and is objectivist in its ontological position, whereas qualitative research takes an inductive approach, comes from interpretivist perspective and is constructionist in its ontological position (Bryman, 2016; Robson, 2002).

The nature of this study, with its focus on understanding the contribution of socially driven businesses and innovations to social sustainability, is consistent with the interpretivist approach. Interpretivism is often appropriate in business research, as business situations are highly complex and unique (Saunders et al., 2009). This study accepts that the empirical data collected is based on the values, presuppositions, ideas and experiences of the interviewees. Likewise, the researcher’s values are inherent in all phases of the research process.

This study can be seen as hermeneutic, in that it tries to understand a complex phenomenon as a whole from preconceptions about the meanings of its parts (Gadamer, 1976). It connects theories and cases together within the umbrella study and aims at creating a holistic understanding of the phenomenon using data within the case studies. The understanding of the whole phenomenon was achieved through the individual cases and the understanding of each individual case was achieved through reference to the main phenomenon. The previously familiar elements in the chosen case studies created a supportive pre-understanding of the phenomenon in question that enabled the researcher to plan the study.

The research strategy chosen for this dissertation was qualitative case study, which implies an inductive approach and the generation of theories rather than their testing. While the data used in the sub-studies was primarily qualitative, in Sub-study III both qualitative and quantitative methods were employed.

Figure 5 provides an overview of the research choices made by the researcher – research strategy, approach, philosophy, context, literature and data collection methods – and shows the overall research process. It illustrates how the series of choices, shown as tiny spheres, integrate to form the dissertation as a whole.
3.2 Research design: strategy, case selection and context

3.2.1 Case Study as a research strategy

According to Yin (2009: p.18), a ‘case study is an empirical inquiry that investigates a contemporary phenomenon, “the case,” in depth and within its real-world context especially when the boundaries between phenomenon and context may not be clearly evident’. Case study research is appropriate when the researchers have to a) define research topics broadly not narrowly, b) cover contextual or complex multivariate conditions and not just isolated variables and c) rely on multiple and not singular sources of evidence (Yin, 2003). Yin argues that case studies should go beyond descriptive questions (who, what, where, how many, how much) to answer how and why questions (Tashakkori and Teddlie, 1998). A case study is also a good choice when the researcher has little control over events and when the focus is on contemporary phenomenon within a real-life context (Yin, 2009). Woodside and Wilson (2003) propose a broader definition of case study research. According to them, a case study is an inquiry focusing on
describing, understanding, predicting and/or controlling an individual (i.e. process, animal, person, household, organisation, group, industry, culture or nationality). Case study investigation allows the researcher to retain the holistic and meaningful characteristics of real-life events (Yin, 2009).

Using a case study is recommended when the area of research is new and complex and a limited amount of knowledge is available on it (Yin, 2009). Much theory emerging from case study research is novel, testable and empirically valid (Eisenhardt, 1989). Case studies have been often associated with qualitative inquiry, but they are also compatible with quantitative research (Woodside and Wilson, 2003; Stake 2005) or can contain both quantitative and qualitative data (Bryman, 2016). A case study allows for different data collection methods and can be examined analytically or holistically, hermeneutically or using mixed methods. Case study research is, then, a strategy rather than a methodological choice (Stake, 2005). The quality of a case study can be enhanced by employing multiple tools and both qualitative and quantitative methods in the same study (Eisenhardt, 1989; Woodside and Wilson, 2003; Yin, 2009).

The strategy used in this dissertation is case study, a relevant choice for many reasons. Firstly, this dissertation deals with answering the research question, ‘How do socially driven businesses and innovations contribute to social sustainability?’, which requires extensive, in-depth descriptions of the contribution of these socially driven businesses and innovations to the complex, multidisciplinary phenomenon of social sustainability. Secondly, this dissertation attempts to understand relatively new phenomena on which a limited amount of knowledge is available: the social aspects of sustainability, for example, have received less attention as a research area than other aspects of sustainability (Thomsen and King, 2009). Thirdly, this study attempts to explain a link between socially driven businesses and innovations and social sustainability, and this link is far too complex to be able to grasp using experimental or deductive survey strategies alone. Lastly, this study has employed a full range of evidence – documents, semi-structured interviews, field observations, literature review and questionnaires – which is a unique strength of case study research. The research question is answered through multiple case studies that approach it from various perspectives. These carefully selected cases are distinct in approach, context and level of analysis, yet they all answer the main research question and, taken together, form a meaningful whole.

3.2.2 Case selection and research context

This dissertation starts from the premise that socially driven businesses and innovations (categorised as either social or frugal innovation) contribute to social sustainability; all four cases and five sub-studies (Sub-studies I and IV are both outcomes of Case II) attempt to show this link. Each case study has been carefully chosen to highlight one or more distinct dimensions of this link and to work together to provide an overall understanding of it within the research context. These distinct dimensions form the basis of evaluation in each case of socially driven businesses or innovations.
The case studies were selected according to the following criteria. Firstly, the cases were chosen based on their relevance in terms of sustainability, whether environmental, economic or social. Some cases focus on environmental friendliness, others on economic or social sustainability, and some on combinations with varying degrees of these dimensions. However, all displayed a strong sustainability dimension. Secondly, they represent different fields of business. For example, Case I is a construction material-related business; Case II is green-energy technology business; Case III represents an interesting mix of organisations that are either work integration social enterprises or have earned a social enterprise mark; and Case IV represents organisations ranging from health organisations and energy technologies to mobile money transfer services. Thirdly, most of the organisations are so small they fall into the micro category, while a few are considered small. Case IV is an exception: some of the frugal innovation cases come from larger organisations. Lastly, the cases are a combination of individual businesses or innovations and clusters. For instance, Case I and many business case examples from Case IV represent individual businesses, while Case III represents a cluster of Finnish social enterprises and Case II deals with India’s small hydropower (SHP) industry as a whole.

Case I was selected because cellulose insulation technology is considered to be an eco-friendly technology and its business in Finland has been quite successful. Its applicability to Srinagar, India was investigated, as it was seen as a solution to the problem of uncomfortable housing in Srinagar, especially during winters. Various social, economic and environmental sustainability dimensions of the technology’s potential adoption were studied, with social sustainability being the most important. This research was conducted in Srinagar, the capital of Jammu and Kashmir, India’s northernmost state. The climate there is considered humid continental, with warm summers and cold winters; the lowest temperature recorded is -14 °C. The researcher selected Srinagar as a research area, as the harsh winters and lack of comfortable housing makes it a suitable research target for cellulose insulation technology.

Case II was selected because SHP is a green-energy technology considered a lucrative business in India. The renewable energy business in India has generated increased social sustainability in the areas where SHP units are constructed. The purpose was to analyse the contribution of SHP to realising social sustainability (Sub-study II) as well as economic and environmental sustainability (Sub-study IV). This research was conducted in four states: New Delhi, Himachal Pradesh, Uttarakhand and Jammu and Kashmir. India is an emerging market known for its tremendous SHP potential, and the selected areas are located in mountainous regions with good water reserves and sites suitable for generating power. These regions offer the most potential for SHP in India.

Case III deals with micro and small social enterprises in Finland. The purpose of this research was to analyse their contributions to social sustainability. This research was conducted in Finland, primarily through a survey sent to the social enterprises found in the Finnish register of social enterprises. Social enterprises are challenging targets due to
definitional problems; Finnish society and its records were assessed as being a sufficiently reliable avenue for conducting this research.

Case IV was selected because the concepts of frugal innovation and sustainability are closely linked. The purpose of this study was to find connections between the practical case of frugal innovation and the more nebulous social sustainability and to analyse how frugal innovation promotes social sustainability. India and other BoP markets, like Kenya and China, were the sources of information on frugal innovations.

Table 1 gives an overall description of the chosen cases.

<table>
<thead>
<tr>
<th>Type</th>
<th>Case I (Sub-study I)</th>
<th>Case II (Sub-study II)</th>
<th>Case III (Sub-study III)</th>
<th>Case II (Sub-study IV)</th>
<th>Case IV (Sub-study V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Demonstrating how a socially driven cellulose insulation business can be a social innovation and a sustainable business.</td>
<td>Demonstrating how socially driven SHP technology can help achieve social sustainability.</td>
<td>Demonstrating how Social Enterprises support social sustainability.</td>
<td>Demonstrating how a socially driven SHP technology can help achieve social, economic and environmental sustainability.</td>
<td>Demonstrating how frugal innovations support social sustainability.</td>
</tr>
<tr>
<td>Context</td>
<td>Study of a Finnish cellulose insulation technology and its application in India.</td>
<td>Study of small hydropower in India</td>
<td>Study of social enterprises in Finland</td>
<td>Study of small hydropower in India</td>
<td>Study of frugal innovations from India and other BoP markets</td>
</tr>
<tr>
<td>Data Collection Methods</td>
<td>24 Interviews Observation of 1 cellulose insulation production plant</td>
<td>28 Interviews Observation of 1 SHP plant Group discussion at Directorate of Energy, Himachal Pradesh, India</td>
<td>27 Web-based questionnaires 4 workshops in Lahti, Finland</td>
<td>28 Interviews Observation of 1 SHP plant Group discussion at Directorate of Energy, Himachal Pradesh</td>
<td>Extensive literature review</td>
</tr>
<tr>
<td>Analysis</td>
<td>Qualitative Analysis</td>
<td>Qualitative Analysis</td>
<td>Qualitative and Quantitative Analysis</td>
<td>Qualitative Analysis</td>
<td>Literature Review</td>
</tr>
</tbody>
</table>
3.3  Data collection and analysis

A case study can contain both qualitative and quantitative data (Bryman, 2016). Qualitative research produces findings not arrived at by statistical procedures or other means of quantification (Strauss and Corbin, 1998), while quantitative research relies on statistical procedures in which the researcher maintains an objective stance (Saunders et al., 2009). Qualitative research involves the studied use and collection of a variety of empirical materials: case studies, personal experience, introspection, life story, interview, artifacts, cultural texts and productions, observational, historical, interactional, and visual texts (Denzin and Lincoln, 2008), while quantitative research assumes that only knowledge gained through measurement and objective identification can be seen as truth (Gummesson, 2000). Qualitative researchers are concerned with the meanings people attach to things in their lives (Taylor and Bogdan, 1998) and not with obtaining information that can be generalised to other larger groups, as quantitative researchers are. The selection of a qualitative or quantitative method depends on the research problem; neither can be considered superior to the other (Silverman, 2005).

In this dissertation, primarily qualitative methods were utilised to gather data from various sources; this applies to all of the sub-studies except Sub-study III, where quantitative data was also employed. The dissertation could, then, most accurately be described as a collection of qualitative case studies. Data was collected through semi-structured interviews, observations, questionnaires and an extensive literature review. Data collection methods are described in detail in the respective sub-study for each case and listed in Table 1; they are also briefly described below, along with the method of analysis.

3.3.1  Semi-structured interview

The interview is a favoured qualitative research method of social researchers. Interviews provide deep insights, as they record the investigator’s questions while reflecting the personal views of the respondents (Yin, 2009). Interviews can be structured, but ‘qualitative interviewing’ is more flexible and dynamic (Taylor and Bogdan, 1998), resembling a guided conversation rather than a structured query (Yin, 2009). This dissertation relied on the semi-structured interview, in which the interviewer covers a specific list of topics but the timing, exact wording and time allocated to each question area are left to the interviewer’s discretion (Aaker, Kumar and Day, 2004).

Interviews were used in Cases I and II. These interviews could be described as ‘shorter case study interviews’ (Yin, 2009) in that they were focused, lasted about an hour and assumed a conversational manner. In Case I, the empirical data was collected through 24 semi-structured interviews with 4 categories of interviewees, namely 1) industry experts, 2) government officials, 3) representatives from printing houses and 4) housing material retailers. In Case II, the empirical data was gathered through 28 semi-structured interviews conducted with industry experts such as independent power producers,
designers, consultants, manufacturers and government officials. For more information about the criteria for selecting the respondents, refer to Sub-studies I, II and IV. In both Case I and Case II, the interview questions were sent to the interviewees in advance to provide ample time for the interviewees to ponder the questions. The interviews were recorded and documented. In Case II, in addition to the 28 semi-structured interviews, one group discussion was organised at the Directorate of Energy, Himachal Pradesh. This group consisted of 10 participants, who took turns offering insights regarding social innovation and SHP. This group discussion offered greater understanding of the topic.

Interviewing was an appropriate method for Case I, as in-depth information was required on the construction business in the target market. It was important to ask the interviewees about their interpretations of, insights into and opinions about the market for cellulose insulation in Srinagar. Quantitative methods like surveys could not have provided the rich data needed for this case. In Case II, semi-structured interviews were selected due to the need for detailed information and in-depth data about the SHP industry and the researcher’s awareness that new dimensions and concepts could emerge during data collection; other methods might not have been as effective at capturing this emergent data. In both cases, data was analysed using the principles of qualitative content analysis. In Case I, Kolb’s learning cycle was used to analyse the data through the stages of concrete experience, reflective observation, abstract conceptualization and active experimentation (Maylor and Blackmon, 2005). In Case II, a qualitative analysis tool known as Atlas.ti was employed, which assisted in data categorisation and establishing connections and relationships between the categories.

3.3.2 Direct observation

Direct observation serves as an important source of evidence in a case study as the real-world setting is the true essence of every case study. Direct observation brings new understanding to the context or phenomenon being studied (Yin, 2009). It is a research method where the investigator observes the phenomenon of interest without altering the environment. It works best when accompanied by other research methods (Bryman and Bell, 2015) and when there are physical outcomes that can be readily observed. Direct observation should not be confused with participant observation, as the direct observer does not try to be a participant in the context but instead assumes a more detached perspective (Bailey, 1994). Direct observations can range from formal to casual data collection activities. In formal observations, the researcher investigates a certain type of occurrence at specific periods of time in the field, while casual observations can be made throughout the fieldwork simultaneously with other research methods (Yin, 2009).

Direct observation was used in Cases I, II and III alongside other research methods. It provided additional information about the topics being studied. The aim was to experience the real-world setting in order to understand the phenomena in-depth. It was important to understand how the cellulose insulation production plant (Case I) and SHP plant (Case II) actually operated to generate accurate analyses. The researcher
investigated the activities done in each phase, the purpose of various equipment as well as the people managing these projects. Direct observation of both these production plants was rewarding, providing insights and adding richness to the research data. It was enlightening to observe the physical outcomes in a real-life setting, like the generation of green energy (Case II) and production of eco-friendly cellulose insulation material from recyclable paper (Case I). In both the cases, direct observation was formal, as the researcher investigated the factory work (Case I) and SHP plant (Case II) only once, but in Case III, the observational evidence was gathered from four workshop sessions.

3.3.3 Questionnaire

The questionnaire is one of the most widely used data collection techniques due to its low-cost nature and quick data influx (Gray, 2014). A questionnaire can take different forms, for instance combining open-ended and close-ended items (Tashakkori and Teddlie, 1998). A highly structured questionnaire may be an inappropriate choice for a case study (Gray, 2014); a combination of open-ended and close-ended questions along with attitude scales may be more suitable. A disadvantage of the use of questionnaire is the low response rate (Gray, 2014) and this attrition can be a threat to the generalisability and inference quality of the results. Therefore, two to three reminders should be sent to the non-respondents to ensure their participation (Tashakkori and Teddlie, 1998). Questionnaires, especially web-based ones, are less expensive to conduct than interviews (Tashakkori and Teddlie, 1998) or other forms of questionnaires. Web-based questionnaires have some advantages, like better layout, smart design and automatic downloading of respondents’ answers into the database (Bryman and Bell, 2015).

In this dissertation, web-based questionnaires were used as a data collection method in Case III. Likert-scale statements as well as close-ended and open-ended questions were used in the questionnaire. The questionnaire was based on social sustainability indicators and attempted to understand the social enterprises’ employee, customer and community relations. The questionnaire contained 40 questions total, including sub-questions. These questionnaires were emailed to 151 representatives of social enterprises found in the Finnish register of social enterprises, which is maintained by the Ministry of Employment and the Economy. A reminder was sent to non-respondents after a period of 15 days. ZEF software was used to collect and analyse the data. The open-ended answers were analysed using Atlas.ti software; the coding scheme was derived from the data, and the codes were extracted from the open-ended responses.

3.3.4 Literature review

Literature review is a means of reviewing the main ideas and research relating to a specific area of interest (Bryman and Bell, 2015). A good literature review has to be critical but not negative (Bryman, 2016). Silverman (2005) argues that literature review should combine knowledge with critical thought and be mainly written after the completion of data analysis. Gray (2014) argues that a valid literature review shows how the research
contributes to practical solutions and moves beyond mere description to a set of logical, refined arguments. An effective analysis could be instrumental in highlighting new findings and theories that have never been conveyed before. A literature review can be used both to identify theories that the researcher then tests using data (deductive approach) as well as exploring data and developing theories from it (inductive approach) (Saunders et al., 2009).

Based on the above-mentioned principles, a literature review was conducted (Sub-study V) that attempted to establish connections between social sustainability and frugal innovation. This sub-study presented a framework that identified essential themes of social sustainability and showed their relevance in practice through frugal innovation using an inductive approach. For more detailed information about the material collection, selection and analysis, please refer to Sub-study V.
4 Results

This section presents summaries of the five sub-studies that make up Part II of the dissertation. Each sub-study provides an answer to one or more sub-questions that relate to the main research question.

4.1 Summary of dissertation sub-studies

Part II of the dissertation consists of five sub-studies that address one or more sub-questions of the main research question: How do socially driven businesses and innovations contribute to social sustainability? Sub-question (a), How can socially driven businesses be sustainable and contribute to social sustainability?, is answered in Sub-studies II, III and IV. Sub-question (b), How can socially driven innovation benefit society?, is answered in Sub-studies I and V. Sub-question (c), How does frugal innovation support social sustainability?, is answered in Sub-study V. This relationship between research questions and sub-studies is summarised in Figure 6.

![Figure 6: Relationship between sub-studies and research sub-questions](image)

A description of each sub-study is presented in Table 2, including title, objectives, findings, sub-question(s) answered (a, b and/or c) and contribution to the dissertation.
Table 2: Summary of the sub-studies

<table>
<thead>
<tr>
<th>Type</th>
<th>Sub-study I</th>
<th>Sub-study II</th>
<th>Sub-study III</th>
<th>Sub-study IV</th>
<th>Sub-study V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>An Environmentally Friendly Cellulose Insulation Technology for Srinagar, India: A Sustainable Business and Social Innovation</td>
<td>Towards realising social sustainability in the small hydropower sector in India: opportunities for social innovations</td>
<td>How the Social Enterprises support Social Sustainability</td>
<td>Small hydropower in India: Is It a sustainable business?</td>
<td>How frugal innovation promotes social sustainability</td>
</tr>
<tr>
<td>Research Objective</td>
<td>Identify the applicability of cellulose insulation technology to Srinagar, India and show how it can be a social innovation and a sustainable business.</td>
<td>Find out whether SHP is instrumental in achieving social sustainability.</td>
<td>Examine whether social enterprises support social sustainability.</td>
<td>Examine whether SHP is a sustainable business in India, one that realises social, economic and environmental sustainability.</td>
<td>Find a connection between social sustainability and frugal innovation.</td>
</tr>
<tr>
<td>Research Question Addressed</td>
<td>b</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td>b, c</td>
</tr>
<tr>
<td>Main Findings</td>
<td>Cellulose insulation could act as a socially driven innovation and sustainable business in Srinagar. Srinagar offers great potential for this business.</td>
<td>SHP contributes to social sustainability but additional effort is needed to characterize it as fully socially sustainable.</td>
<td>Social enterprises generate employment, which has had a positive social impact. Employee participation is valued but workplace practices need improvement.</td>
<td>All three dimensions of sustainability are being realised but additional effort is needed in each dimension to achieve complete sustainability.</td>
<td>Frugal innovation can be viewed as an approach towards realising social sustainability and fulfilling the United Nations’ Sustainable Development Goals.</td>
</tr>
<tr>
<td>Contribution to Dissertation</td>
<td>Highlights the positive impacts of a socially driven innovation on a given society in the form of comfortable shelter, protection from illnesses and harsh winters. Thus supports basic tenets of social sustainability, including human well-being, basic needs and high quality of life.</td>
<td>Presents the contribution of a socially driven business to social sustainability in the surrounding community. Offers suggestions for a more socially sustainable SHP sector.</td>
<td>Highlights the contribution of socially driven businesses to social sustainability. Offers social sustainability-based suggestions for improving operations.</td>
<td>Presents the contribution of a socially driven business to social, economic and environmental sustainability. Offers suggestions in each dimension of sustainability.</td>
<td>Pinpoints the connection between social sustainability and frugal innovation. Highlights the positive impacts of frugal innovation on a given society and the ways this enhances its social sustainability.</td>
</tr>
</tbody>
</table>
4.2 The contribution of socially driven businesses to social sustainability

Sub-question (a), How can socially driven businesses be sustainable and contribute to social sustainability? is answered in Sub-studies II, III and IV. The summarised results of these sub-studies are presented below.

Sub-study II: ‘Towards realising social sustainability in the small hydropower sector in India: opportunities for social innovations’

Background and objectives

The goal of sustainable development is to create a system that provides for quality of life by integrating social, economic and environmental sustainability (Kleef and Roome, 2007). Social sustainability is, thus, a fundamental element of sustainable development that cannot be ignored (Magis and Shin, 2009). In a similar vein, the social innovations that prioritise human welfare are inherently linked to sustainable development, as changes in the behaviour of individuals and institutions are considered critical to sustainable development (Dobson, 2007) and these changes are key concerns in generating social innovations. This study investigates a green-energy business in India: small hydropower, or SHP. SHP is promoted as one of the most cost-effective energy technologies for generating power in the rural areas of developing countries (Paish, 2002). Green-energy technologies have been a topic of research interest for years, yet the social sustainability and social innovations realised due to green-energy businesses have not been subjected to empirical analysis. This study focuses on the SHP industry to understand its role in and any contributions to realising social sustainability in surrounding communities. The sub-study includes a description of India’s SHP industry, with a special focus on challenges faced by the industry. These barriers are then studied as opportunities for social innovations. Furthermore, this study also suggests steps for making SHP more socially sustainable.

This study answers the following research questions: How is social sustainability achieved through the development of the SHP sector in India? Are there any possibilities for the generation of social innovations?

Findings

The results of this study indicate that the development of SHP units has contributed to the larger goal of social sustainability in the surrounding communities. Generally speaking, the remote areas where the SHP plants are established become more socially sustainable. The villages not only get electrified, but the SHP units also generate employment, support small-scale industry and improve infrastructure. Other benefits include reduced migration of local people from the area and the establishment of local schools, parks, hospitals, temples, and so on. On the other hand, the SHP industry also faces challenges, such as
getting statutory clearances, resistance from local communities, construction difficulties, unskilled labour, ambiguous government policies, high interest rates and management problems. Efforts have to be made to characterize SHP as ‘socially sustainable’. In order to be fully socially sustainable, the SHP sector needs to continue to promote human well-being, improve working conditions for workers, encourage equal participation in local communities and governments, and strengthen stakeholder relationships. This study explores these challenges as opportunities for social innovation and proposes some suggestions for the successful implementation of SHP projects. First of all, the government should assign these projects to independent power producers only after getting all the clearances from different departments. Second, training should be provided to those who create SHP policies at the national level as well as to the local employees who operate and manage these SHP plants. Third, infrastructure problems need to be addressed by building roads, bridges and transmission lines. Lastly, the independent power producers should search for foreign funding in order to lower their interest rates and get better returns on their investments.

Sub-study III: ‘How the Social Enterprises Support Social Sustainability’

Background and objectives

In order to tackle the concept of sustainable development and achieve ambitious sustainability goals for current and future generations, much interdisciplinary work needs to be dedicated to dealing with pressing societal problems (Turvey, 2015). In the past, ecological concerns have taken precedence over societal concerns in the sustainability debate (Ratamäki, 2013). However, it is clear that new mechanisms need to be developed, ones that would also address social sustainability. Social enterprises, organisations focused on addressing social issues (Borzaga and Defourny, 2001) could be viewed as a small step towards realising social sustainability. The link between social enterprises and social sustainability has not been much discussed in the literature. This study investigates whether social enterprises in Finland are socially sustainable and support social sustainability. It sheds light on the link between the concepts of social sustainability and social enterprises and recognizes the possibility of realising social sustainability through the development of social enterprises.

Findings

Social sustainability indicators were developed to assess the social dimensions of sustainability in the social enterprises being studied. These indicators were classified into three main categories: employee relations, community relations and customer relations. The analysis showed that, among the social enterprises, employee participation was highly valued and employees were given equal opportunities. However, the social enterprises needed improvement in terms of workplace practices. Most lacked systematic approaches to evaluating employee performance. They collaborated with businesses,
NGOs and public sector organisations but exhibited little collaboration with universities or research organisations. They engaged customers, but lacked a systematic approach to gathering development ideas from them. The role of social enterprises is still unstable and developing. Their most important role is employment generation, which has had a positive social impact. Social enterprises empower the long-term unemployed and those on the margins of society by providing them with a stepping-stone to working life. The biggest challenges faced by these social enterprises are lack of resources and inadequate funding. In short, social enterprises fulfil basic social sustainability criteria; however, improvements are needed in certain areas as measured by the indicators.

Sub-study IV: ‘Small hydropower in India: Is it a sustainable business?’

Background and objectives

Business plays a critical role in sustainable development (Porritt, 2005), and the development of green businesses is critical to achieving long-term sustainability, as it encompasses economic and social concerns alongside environmental ones (Tueth, 2010). In this context, green-energy businesses have garnered a lot of attention in that, unlike the non-renewable energy sources, they generate clean energy and minimise the release of greenhouse gases. This study investigates one source of green energy: small hydropower, or SHP. SHP plants are green-energy generation sources that are economically viable and require little time to implement (Ghosh, 2012). In India, SHP refers to hydropower units that possess a generation capacity of less than 25MW. This study investigates the sustainable nature of SHP in India. This objective was realised by taking into account the complex network of SHP stakeholders, each of whom has a variety of interests. The study increases understanding of the three interconnected dimensions of sustainability – social, economic and environmental – in relation to India’s SHP industry.

This study answers the following questions: Is the SHP business in India a sustainable business? Does it realise all three dimensions of sustainability?

Findings

Sustainable development concerns three interconnected dimensions: economic, environmental and social sustainability. A business that attempts to strike a balance between these dimensions in business decision making is a sustainable business. India’s SHP industry was studied with this definition in mind, and the results indicate that the SHP industry has both strengths and weaknesses. With regard to economic sustainability, it was noted that most SHP projects are economically viable, yet viability depends on many factors, including site, conditions and size of SHP project. Long gestation periods and high interest rates prolong the payback period. Delays in acquiring government clearances, inadequate evacuation and transmission facilities, high upfront costs, and poor grid connectivity are some of the obstacles that can impact project profitability. Changes like alternate funding options and a formalized clearance procedure could make SHP
more economically viable. Secondly, environmental sustainability has not been yet fully achieved, and significant continuing efforts need to be expended to make SHP plants truly environmentally friendly. All SHP plants impact the environment to a certain extent, by altering river ecosystems. However, this impact is minimal as compared to other energy-generation sources. On a positive note, SHP is a renewable, clean and non-polluting energy source that generates no waste and offers significant carbon emission reduction. Nevertheless, it is possible to build environmentally friendly SHP plants sustainably or less sustainably. In India, environmental awareness has to be improved, and investments in technological research should be made to make this sector more sustainable. Lastly, with regard to social sustainability, numerous benefits, like village electrification, employment generation and promotion of small-scale industry have resulted from SHP development. Nevertheless, many social challenges continue to exist. In short, all three pillars of sustainability are being realised to a certain extent. However, to be considered a truly sustainable industry, a considerable amount of hard work needs to be dedicated to addressing the factors mentioned above.

4.3 The contribution of socially driven innovations to social sustainability

Sub-question (b), How can a socially driven innovation benefit a society? is answered in Sub-studies I and V, while sub-question (c), How does frugal innovation support social sustainability? is answered in Sub-study V. The results of these studies are summarised below.

Sub-study I: ‘An Environmentally Friendly Cellulose Insulation Technology for Srinagar, India: A Sustainable Business and Social Innovation’

Background and objectives

Social innovation originates from various sources and can be applied to various disciplines. It has no fixed boundaries and cuts across all sectors (BEPA, 2010). Social innovation has the potential to act as an instrument of change and overcome societal challenges. It has many definitions; one definition that is suitable in the context of this study is that social innovation can be seen as new application of an old idea or the transfer of an idea from one part of the world to another in a way that effectively meets social needs (Mulgan et al., 2012).

This study focuses on Srinagar, which is a northern Indian city that faces harsh winters. Buildings in Srinagar are not insulated, which makes it very hard for people to survive the cold. Lack of electricity and heating facilities result in poor quality of life. In this study, a sustainable cellulose insulation technological solution – an idea borrowed from Finland – is proposed for Srinagar. It can be seen as a social innovation, since the transfer of this technology and the adoption of the cellulose insulation business could positively benefit society in Srinagar. It can also be seen as a sustainable business, as it has the
potential to holistically address economic, social and environmental challenges (Tueth, 2010). This study explores the applicability of a sustainable cellulose insulation business in the context of Srinagar. The main research aims are to discover the demand for cellulose insulation in Srinagar and whether it could be seen as a socially driven innovation and a sustainable business option for Srinagar. This study also aims to identify the main challenges and opportunities associated with bringing this business to Srinagar.

Findings

The cellulose insulation business in Srinagar could be seen as a sustainable business solution that has the potential to benefit society. It is a sustainable business that will not only save energy by reducing the electricity bills of the inhabitants and assist in waste management, but it will also produce economic benefits for the region. The research establishes that there is potential for cellulose insulation business in Srinagar, as there is hardly any competition in this sector. Lack of availability of insulation materials in the valley was the main cause of its unusability. The government offers attractive incentive packages for industries that plan to set up ventures in Srinagar. Some threats to the business are also identified, including political disturbances in the valley, corruption and weak IPR protection. This study also proposes some recommendations for investors interested in pursuing the cellulose business in Srinagar.

The main objective of this sub-study was to identify the relevance of the cellulose insulation technology for Srinagar, and much of the information presented in it is critical to justifying that perspective. This sub-study shows how cellulose insulation technology could act as a socially driven innovation and contribute positively to the surrounding society. Not only could it generate economic benefits, solve waste management problems and produce energy efficiency, but the social sustainability of Srinagar could also positively be improved by protecting its residents from cold and illnesses and providing them with comfortable lives during harsh winters. The quality of life of the city’s residents will be improved once they get access to the basic need of comfortable shelter. The adoption of cellulose insulation in Srinagar could help realise some important features of social sustainability: ‘human well-being’ (Boström, 2012, Colantonio, 2011, Chiu 2003, Magis and Shinn, 2009), ‘basic needs and quality of life’ (Littig and Griessler, 2005, McKenzie, 2004, Polese and Stren, 2000, Spangenberg and Omman, 2006), ‘broad concept of equity’ (Cuthill, 2009, Dempsey et al. 2011, Murphy, 2012) and ‘improved living conditions’ (Holden, 2012).

Sub-study V: ‘How frugal innovation promotes social sustainability’

Background and objectives

In sustainability discourse, environmental protection, economic prosperity and social equity are intertwined. According to Torjman (2000), it is impossible to sustain human well-being in the absence of a healthy environment and a vibrant economy. Social
sustainability has to be understood in relation to both economic and environmental sustainability. Keeping this principle in mind, this study highlights how social sustainability is linked to frugal innovation. Frugal innovation has had a positive impact on societies, as it has aimed to solve pressing societal problems while creating more business and minimising the use of resources (Radjou and Prabhu, 2014). It has been argued that frugal innovation can improve the sustainability performance of a business (Brem and Ivens, 2013). However, the link between frugal innovation and social sustainability specifically has not received much attention. The researcher argues that it is important to study the role of frugal innovation in sustainable development, devise better tools to study this relationship and establish a strong link between the two concepts. The objective of this sub-study is, through reviewing the existing literature concerning both fields, to find the connections between social sustainability and frugal innovation; this literature shows how frugal innovation promotes social sustainability by identifying essential themes of social sustainability and exploring them through existing frugal innovations. Frugal innovation could be viewed as an approach to realising social sustainability and fulfilling the United Nations’ Sustainable Development Goals (SDGs).

Findings

The review of the literature on social sustainability and frugal innovation revealed a strong connection between the two concepts. Social sustainability was studied to identify critical themes, and eight cases of frugal innovation were analysed in light of these themes. In nearly all cases, it was discovered that the most important themes of social sustainability — human well-being, basic needs, quality of life, social justice, social inclusion, poverty reduction and so on — are being addressed in frugal innovations. All cases of frugal innovation studied offered solutions to existing problems. Frugal innovation was determined to be one way of solving the challenges of social inclusion in BoP markets. In addition, in BoP markets, even the poorest segments of society gain access to essential services through frugal innovation. Frugal innovation plays an important role in fulfilling social sustainability, promotes SDGs and contributes towards the larger goal of sustainable development. The most common SDGs promoted by frugal innovation cases include SDGs 1 (no poverty), 3 (good health and well-being), 4 (quality education), 7 (affordable and clean energy), 8 (decent work and economic growth), 9 (industry innovation and infrastructure), 10 (reduced inequalities), 12 (responsible consumption and production) and 16 (peace, justice and strong institutions).

Figure 7 illustrates the connection between social sustainability and frugal innovation. The eight cases of frugal innovation included in the study addressed various social problems, which can be seen in themes identified below. Frugal innovation can, then, be seen as a practical step towards realising social sustainability.
Figure 7: Connection between frugal innovation and social sustainability
5 Discussion and conclusions

This dissertation explores the contribution of socially driven innovations and businesses to social sustainability, as well as how these businesses could be more sustainable and benefit society. The theoretical investigation, together with practical case examples described in the sub-studies presented in Part II, produce novel results. This section discusses the theoretical and practical implications of this dissertation, provides an assessment of the work, addresses its limitations and provides suggestions for future research.

5.1 Theoretical implications

First of all, this dissertation contributes to the scientific discussion by establishing a sturdy link between socially driven businesses and innovations and social sustainability, integrating the two sectors of study. Most literature on social sustainability has come from the field of urban development, and this dissertation expands on it by engaging in a cross-disciplinary exploration of social sustainability, studying it from the perspective of sustainable businesses, social and frugal innovations and social enterprises, with real-world cases complementing the theoretical exploration. A strong connection between business and sustainable development has been recognized for years (DeSimone and Popoff, 2000; Fisk, 2010; Tueth, 2010). This dissertation furthers this existing research, which has primarily focused on the contributions of large firms to sustainability, by highlighting micro and small firms and their contributions to social sustainability.

Secondly, this study indicates that micro and small-scale socially driven businesses and socially driven innovations can be viewed as vehicles for achieving greater social sustainability in a given community. At present, sustainability studies suffer from lack of a framework for improving social sustainability through socially driven businesses (such as social enterprises) or socially driven innovations (such as social and frugal innovation). Through numerous case examples, this dissertation shows how socially driven businesses and innovations address various social sustainability themes that jointly promote sustainable development. The results can act as a stepping-stone for future studies on practical approaches to achieving social sustainability.

Thirdly, viewing research on green and sustainable businesses through the specific lens of social sustainability brings new findings to the surface. It not only recognizes profitability and sustainability from the perspective of the businesses, but identifies their promotion of social sustainability. This applicability of sustainable businesses and technologies could be seen as a tool that has the potential to bring about positive social changes in a society, improving its social sustainability. The results from this research contribute to social sustainability by providing evidence for how sustainable businesses can generate value for a given society by addressing social challenges plaguing that society.
Lastly, this research emphasises how the existence of social enterprises relates to social sustainability. It suggests ways of assessing and improving the sustainability of social enterprises, while showing the contribution of social enterprises to social sustainability. Similarly, with regards to frugal innovation, this dissertation has positively contributed by highlighting its link to sustainability, which has been previously ignored in the literature. Please refer to the sub-studies presented in Part II for a thorough understanding of the scientific contribution of this study.

5.2 Managerial implications

This dissertation explores the role of micro and small-scale businesses in generating social sustainability through case studies that focus on several unique, socially driven businesses and technologies. The cases offer evidence about the connection between socially driven micro and small businesses and technologies and social sustainability, and indicate that socially driven businesses have the potential to have a strong impact on social sustainability.

The evidence presented in the cases can act as a foundation for socially driven businesses to direct their efforts towards further improving sustainability, and indeed most of the cases offer the stakeholders involved novel viewpoints, lessons learned, and numerous suggestions for better gauging and operationalising sustainability, thereby boosting their social sustainability impact (see for example, Sub-studies I, II, III and IV). These new insights this dissertation provides the managers of socially driven businesses can be considered a contribution to practice.

Socially driven innovations have been instrumental in solving wicked societal problems. This dissertation highlights the contribution of these innovations to social sustainability and the overarching goal of sustainable development. Reciprocally, the insights this dissertation provides could be used by these innovators when marketing and promoting their products and services, by showing the impact of these products from a larger perspective and highlighting the sturdy link that exists between these innovations and sustainable development.

5.3 Assessment of the research

The quality of any research is generally assessed by its reliability, validity, generalisability and credibility. Reliability is the tendency of a body of research to produce consistent results if measured repeatedly (Maylor and Blackmon, 2005; Bryman, 2016). Validity is concerned with the integrity of conclusions generated from a study (Bryman, 2016); a research is valid if it captures the truth of the situation and is not influenced by outside influences or personal preferences (Maylor and Blackmon, 2005). According to Brinberg and McGrath (1985), validity carries different meanings during various stages of a research process. During the three stages of research process – the ‘prestudy’ stage, the ‘central’ stage and the ‘follow-up’ stage – validity means value or
worth, correspondence or fit, and robustness or generalisability, respectively. Generalisability refers to the extent to which the findings of a study are relevant in another setting or situation (Stokes, 2011). Credibility questions whether or not the results are well founded; research is considered credible if the findings are supported by the evidence (Maylor and Blackmon, 2005).

Yin (2009) describes four criteria for judging the quality of a research design: 1) construct validity: identifying correct operational measures for the concepts being studied; 2) internal validity: seeking to establish a causal relationship whereby certain conditions are believed to lead to other conditions, as distinguished from spurious relationships; 3) external validity: defining a domain to which a study’s findings can be generalised; and 4) reliability: demonstrating that the operations of a study — such as the data collection procedures — can be repeated, with the same results. Tashakkori and Teddlie (1998, p. 89-93) have presented some strategies for checking the quality of qualitative data, which were partly applied in this study.

These criteria for quality control guided the research. Reliability was ensured by following a case study protocol (Yin, 2009) consisting of the following sections: overview of the study, data collection procedures, data collection questions and a guide for the report. The protocol was important, as it helped the researcher maintain the focus of research and anticipate problems. For example, the necessary sections in the case study protocol obligated the researcher to identify all important aspects long before the case study was conducted.

To tackle the issue of validity, multiple sources of evidence or triangulation were used. Triangulation can be classified into four types: data triangulation, investigator triangulation, theory triangulation and methodological triangulation (Patton, 2002). In this study, construct validity was verified through these types of triangulation. Theory triangulation was achieved through combining several theories to interpret and understand each case. In each case study, findings were supported by one or more methods of data collection. For example, in Case I, data was collected through interviews and observations alongside specific documentation. In Case II, data was collected through interviews and observations, and in Case III, questionnaires and data from workshops were used to produce findings. In Case III, investigator triangulation was used to validate the interpretations of the data and cross-check the conclusions.

In terms of generalisability, some cases are specific to a particular target market and generalising them may be inappropriate. Maylor and Blackmon (2005) suggest that if the research is not applicable to other settings, generalising should be avoided, while Yin (2009) claims the lessons learned from case studies can be subject to analytical generalisation. In this instance, the generalisable findings or lessons learned in one case study were applied in reinterpreting the results of the other case studies. In addition, the sub-studies that resulted from the case studies were presented at scientific conferences and published in peer-reviewed journals, highlighting the validity and generalisability of the research.
This dissertation is a combination of several in-depth case studies chosen from various perspectives to enhance the researcher’s understanding of the central phenomenon under investigation: ‘How socially driven businesses and innovations contribute to social sustainability’. The individual cases were chosen from various contexts, and in each case, critical attention was paid to the quality criteria throughout the research process. Various methods were employed to determine the trustworthiness of the qualitative research (Tashakkori and Teddlie, 1998): 1) prolonged engagement: the researcher spent nearly four years studying the phenomenon under investigation; 2) persistent observation: the researcher identified the characteristics and most relevant aspects of the phenomenon under investigation through persistent observation of the phenomenon; 3) use of triangulation techniques: triangulation techniques, including triangulation of sources, methods and investigators, were used in all the individual cases; 4) peer debriefing: the researcher discussed various aspects of the study with peers to clarify interpretations and probe biases, which contributed to the credibility of the study; and 5) reflexive journal: a reflexive diary was used, in which the researcher recorded a variety of information about the phenomenon under investigation.

5.3.1 Reflections of the researcher

This section describes the researcher’s role while conducting the empirical study. It provides a discussion about the researcher’s experiences and reflections during the empirical research process. As this study was qualitative in nature, the distance between the researcher and the participants was rather diminished due to the fact that the participants were considered the best experts to know about the subject matter. Therefore, their perspectives have been taken into consideration, which demands the understanding and increased familiarity between the researcher and the participants. It can be very well assumed that the empirical material collected during the research process was ‘representative of the participants’ social worlds’ (Eriksson and Kovalainen, 2008).

The researcher could be considered a primary instrument of the study, which means that the research process has been mediated through the researcher’s understanding rather than through any technical equipment. Therefore, the researcher’s values, age, gender, race, ethnicity and experiences have shaped the research process and the understanding and interpretation of the research material is impacted by these factors. The researcher has therefore been an active agent during the research process. The hermeneutic approach is visible in this research. The researcher’s prior knowledge of the target market, which can be observed in the case studies has formed a basis of this research. For example, in Case I, the rationale behind selecting Srinagar as a research area was the result of the severity of winters that the researcher had personally experienced. The prior knowledge about the uncomfortable housing and unbearable climatic conditions developed certain pre-understanding. In Case II, selection of SHP as a case study was the result of researcher’s familiarity with the topic of green energy businesses in emerging markets that the researcher had studied prior to conducting this research. However, this prior knowledge is only regarded as preliminary version of understanding, which has modified during the research process. The researcher has interpreted and understood things based on her pre-
understanding. Her gender, experiences, culture and expectations have played a big role in understanding the overall reality. As the prior knowledge base grew, the position towards this knowledge also modified. However, the researcher has been an outsider while gathering the research material, which gave her a better opportunity to stay increasingly analytical and even critical, towards the issues that she was examining.

As mentioned earlier, the evaluation of the research was done during the whole research process, not only at the end. In addition to the above mentioned quality criteria, the criteria that assessed the goodness or trustworthiness of the research were developed such as dependability, credibility, conformability, and transferability (Eriksson and Kovalainen, 2008). First of all, the researcher has produced a dependable research as it is logical, traceable and documented. Second, it is credible as the researcher has sufficient data to support the findings. Third, it is conformable as it links findings and interpretations to the data in ways that are easily understood by others. Lastly, it is transferable as some similarities can be found in other research contexts.

5.4 Limitations

There were some unavoidable limitations in this research that need mentioning. First of all, this study presented a limited number of cases with a strong regional focus. Although these cases clearly depicted the effect of socially driven businesses and innovations on social sustainability, they focused mainly on Finland and India. Some cases were specific to a particular target market, meaning findings could not be generalised, even to other areas within the same country due to different geographical conditions. This regional focus should be taken into account while applying the results to future studies or practice.

Secondly, the study was multidisciplinary in nature. Although multidisciplinary research is much needed, as it is key to understanding the link between nature and society and finding a way to solve the wicked societal problems that exist in this world, the multidisciplinary nature of this project posed some challenges for the researcher. No existing theoretical foundation within the respective fields of study addressed this specific research problem, so the researcher had to make connections between theoretical traditions to devise a sound theoretical foundation for this study. Different theories were presented that showed the connection and relevance to the topic of research. In the field of social sustainability, which relies heavily on data about urban development, this piece of research may not be seen as a contribution to its existing literature, but the contribution to business literature should be apparent.

Thirdly, the topic under investigation has been little researched. Very few instruments are available that could measure the effect of socially driven businesses and innovations on social sustainability, and most procedures available to the researcher were not applicable. Therefore, the researcher devised new, primarily qualitative methods of studying this connection. As a result, the researcher was not always as removed from the data as during quantitative research, which may have led to more subjective results. The samples used in most of the qualitative case studies were appropriate, and sufficient data was collected.
However, in Case III, where quantitative data was employed, the response rate was rather low. Please refer to the sub-studies for detailed discussion about methodological limitations specific to individual cases.

Lastly, the research results presented in this dissertation were based on case studies of diverse micro and small businesses and cannot be generalised to large multinational firms. The micro and small businesses studied had a staff count of less than 50 and turnover of less than €10 million, which is in line with the European Commission’s classification of SMEs. Despite the exclusion of big multinational companies in this instance, the researcher acknowledges their social sustainability initiatives in many parts of the world.

5.5 Future research suggestions

This dissertation explored social sustainability from a rather novel approach: micro-level business cases, which were studied in depth and then analysed in terms of links to the macro concept of social sustainability. This enigmatic concept of social sustainability was studied through practical business cases, like cellulose insulation or small hydropower, social enterprises and numerous frugal innovations, enhancing understanding of how these micro and small businesses or innovations can be instrumental in promoting social sustainability. Even small steps have the potential to make marked contributions to the overarching goal of social sustainability.

The findings generated some interesting possible opportunities for future research. First of all, this dissertation either focussed on the application of Finnish technologies in an Indian context or the study of Finnish and Indian micro and/or small businesses and their role in generating social sustainability. Future studies could focus on contexts other than Finland and India. One particularly fruitful avenue would be to study the role of social enterprises in social sustainability in other countries and then compare the results to Finnish social enterprises (Case III). Comparing and contrasting findings from different parts of the world would make it possible to achieve a holistic perspective and gain an enriched understanding of this concept.

This study was challenging in that the topic has not received much attention, and existing indicators for measuring the social sustainability of micro and small-scale businesses or innovations were limited. Measuring social sustainability was difficult: for the most part, the researcher devised new indicators based on the three pillars of sustainability. In future studies, it could be interesting to study this relationship using different indicators and instruments. According to recent research, impact assessment tools (Best and Harji, 2016; So and Staskevicius, 2016) have proven quite useful in assessing the social impact of business models and projects, making them an attractive and intriguing alternative in future study.

In this dissertation, the researcher relied primarily on qualitative methods; future research could be conducted on a much larger scale by employing quantitative methods. This may be useful when attempting to generalise findings and conducting research in a value-free
way where the researcher is independent of the data, which may lead to more objective results (Saunders et al., 2009). The present study explored the topic through in-depth cases, which was important to understanding the relationship of this little-researched field. However, it did not approach the whole population or even a considerable sample of the micro and small businesses in India or Finland. Future studies could target a bigger sample through quantitative methods. Lastly, it would be interesting to study the contribution of multinational companies to social sustainability specifically.
References


Publication I

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An environmentally friendly Cellulose Insulation Technology for Srinagar, India: A Sustainable Business and Social Innovation

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Abstract

Insulating a house decreases energy consumption and creates better living conditions by keeping the inhabitants warm in winters and cool in summers. It is an important choice to be considered while building the houses/ commercial buildings anywhere in the world. While the western countries have been insulating the constructions for several decades now, this concept stays unfamiliar to many Indians living even in the coldest areas of India. This paper attempts to investigate the applicability of cellulose insulation technology to Srinagar, India. The study is based on the analysis of qualitative data acquired through the in-depth interviews with the key stakeholders including structural engineers, construction companies, architects, government officials, printing agencies and retailers in Srinagar, India. According to the results, cellulose insulation business in Srinagar could not only be seen as an opportunity for sustainable business but also as a socially driven innovation. Insulation is essential for comfortable living as it could protect the people from cold and illnesses during harsh winters. Srinagar offers great potential for cellulose insulation business and it would receive great support from the government. The reason for its unusability is the lack of availability of such technologies in the market. The strengths as well as threats to cellulose insulation business in Srinagar are identified. This study also proposes suggestions for interested investors.

Keywords: energy consumption, cellulose insulation, living conditions, India

1. Introduction

A lot has been discussed about the concept of innovation so far. Today, innovation is discussed in all fields of study be it business, entrepreneurship, design, technology, engineering or sociology. The fact that innovation is being studied from various perspectives gives rise to different interpretations. Today the concept of innovation has expanded and it does not only entail the traditional definitions. One such expansion is the study of social innovations alongside traditional technological innovations (Melkas & Pekkarinen, 2010).

One broad definition of social innovation is that it refers to new ideas that work in meeting social goals. Social innovation is differentiated from business innovation as the latter is generally motivated by profit maximization (Skoll Centre for Social Entrepreneurship, 2007). Business innovations have always been regarded as tools that could potentially generate high revenues but they are undermined in their nature to meet social goals like social innovations.
This study emphasizes that the business innovations could also to a large extent be socially motivated. This is further explained by proposing a sustainable business solution that could bring about societal transformation.

This study focuses on the coldest northern state of India, Jammu and Kashmir (J&K) that faces harsh winters with temperature dipping as low as –40 degrees Celsius in certain areas and yet the heating facilities available for the people are insufficient. As the government cannot provide electricity throughout the day, the concept of centrally heated constructions is rare. The constructions are not even insulated which makes it much harder for the people to survive the cold. As a result, the houses are very cold inside and people need to wear heavy woollen clothes even when they are indoors. Proper insulation of the houses can make a big difference to the lives of the people of J&K by not only preventing them from cold but also by avoiding the illnesses caused by the chilly winters.

Insulation helps in reducing the amount of energy required to heat or cool a building thus reducing the energy utility bills of consumers. Western countries have experience of using the insulation material in constructions for over several decades now. Today, more environmentally friendly and economically viable insulation materials are being offered in the market. For instance, cellulose blown insulation has a much smaller impact on the environment. ‘It is one of the greenest products in the world. It is made from recycled newsprint and other paper sources, paper that might otherwise end up in landfills, releasing greenhouse gases as it gets decomposed. Further, its production uses far less energy than any other type of insulation like fiber glass or foam insulation’ (Cellulose Insulation Manufacturers Association (CIMA), 2012). Thus this cellulose insulation material is suitable for the Indian market as it is produced from waste paper which could be readily found in India.

The process of insulating the houses and buildings in J&K is a new concept and the technologies required for this process are unavailabe. The fact that such technologies do not exist in J&K gives an excellent opportunity for the foreign companies to provide their tested sustainable business solutions to the people of J&K. The foreign companies could internationalize and expand their businesses and the people of J&K could have better living conditions. It is argued that the proposed business solution is considered as a social innovation even though it is not a completely new idea as it is an already established solution in the western world but it is a new idea in terms of its applicability to J&K, India and it has the potential to improve the lives of the people by reducing cold and illnesses thereby meeting social goals.

This research is purposeful as it not only supports the concept of sustainable cellulose insulation business but it also recognizes that the business innovations can also be socially driven. The article aims to identify the applicability of sustainable cellulose insulation technology to J&K, India.

The key research questions are: 1) what is the demand for the cellulose insulation in Kashmir and could it be a socially driven innovation? 2) Is cellulose insulation a sustainable business option for Srinagar? 3) What are the challenges and opportunities associated with cellulose insulation business in Kashmir? 4) How can this business be established in Srinagar?
2. Theoretical background

The theoretical background of this research focuses on sustainable development/sustainable business and social innovation. The cellulose insulation business has been viewed as a sustainable business as it is an environmentally friendly business which also has a social role. It has a potential of reducing the ailments and providing a better life for the inhabitants of Srinagar by protecting them from extreme cold. This business innovation in this city has the potential to act as a social innovation by meeting the pressing unmet needs of people and improving their lives.

2.1 Sustainable business

Sustainable development is the term that has been in public domain since mid-1980s and it reflects three important and interrelated dimensions: social equity, economic prosperity and environmental quality (Soyka, 2012). It is considered to be a worthy goal; however, there is no common understanding about the way this goal could be achieved (Gray, 2010; Robinson, 2004). As this mission of achieving sustainable development is becoming important, the role of business sector is considered to be crucial (Porritt, 2005). Sustainability cannot be regarded as a separate theme that just exists to enhance a firm’s reputation (Fisk, 2010). Instead, it has to be adopted into everyday practices of a business (Weybrecht, 2010). The issues of sustainability have to be moved from the fringes to the heart of the business (Fisk, 2010). These notions of sustainability and sustainable development have been further expanded to sustainable business. Sustainable business that is largely understood as environmental business is in fact much more than just mere ‘green business’. It also encompasses the social and economic dimensions that are equally significant in maintaining the sustainability of a business (Tueth, 2010). These three dimensions represent the three basic pillars of sustainable business. Sustainable business understands how to address economic, social and environmental challenges holistically in order to create a better world (Fisk, 2010). Sustainable business provides quality of life while considering the environmental resources as well as the economic prosperity. In the search for sustainable business solutions, the social aspect cannot be overlooked and the future generations have to be taken into consideration. After all, businesses make an impact on the humans and the world at large and therefore this impact has to be positive.

For a new and sustainable business world, sustainable innovations are needed. These sustainable innovations can be applied at any level of the organization from the processes all the way to the market or strategy (Fisk, 2010). Another important element of sustainable business world is collaboration. The global firms today need to avail opportunities from various different parts of the world. The innovation activities are tied to internationalization (Hautamäki, 2010). Prahalad and Krishnan describe the global innovation environment with the formula R=G meaning resources are global (2008). Thus collaboration, internationalization and innovation form the pillars of the new sustainable business world.
2.2 Social Innovation

In the recent years, social innovation has been gaining visibility in the field of innovation studies although its roots are embedded in social sciences. Social innovation as a concept has been interpreted differently across different fields and it is not restricted to one field of study (BEPA, 2010). Social innovations originate from many sources and eventually are applied to various fields. The various foundations can include academic research, social businesses, political campaigns and new technologies. Social innovations are continuously looking for answers to the many different social problems by delivering the new services that improve the quality of life of individuals and communities (SIE Report, 2012). All the definitions of social innovation have one thing in common and that is clearly the ability of these new ideas, notions, strategies or concepts to meet the basic social needs that benefit the society. Therefore, as defined in SIE Report, ‘Social innovations are new ideas, institutions, or ways of working that meet social needs more effectively than existing approaches. Often, social innovation involves the remaking and reuse of existing ideas: the new application of an old idea or the transfer of an idea from one part of the world to another’ (2012). Social innovations do not have to be completely novel in their essence. A tried and tested idea in one part of the world could very well be a completely novel idea in another part of the world and therefore be considered as an innovation.

Social innovation and business innovation have been distinguished by the authors who assume that the business innovation is a mere profit seeking innovation and the whole idea is to help the firm improve its performance and generate revenue. It is also argued that every innovation by a firm that meets a social goal turns out to be a social innovation and thereby every business innovation is a social innovation (Pol & Ville, 2009). According to Pol & Ville, the distinction between social innovation and business innovation is important because then only the inherent characteristics of social innovations could be studied effectively (2009).

However, the author argues that there is no special need to distinguish one from the other if the aim of the business is not just profit maximization but quality of life. Although every business needs to make money but the businesses could at the same time be motivated by social goals. Improving the quality of life drives the notion of social innovation and if it is the same for any business innovation then it does not make any sense to make a distinction between the two concepts.

The role of new social innovation businesses is to achieve desired social change by solving the societal problems and at the same time achieving the economic goals. There is no need to separate a social cause from business as the latter is always embedded in the society and therefore cannot be separated from it. Non-profits originated because the firms could not address the market failures like poverty, pollution, illiteracy (Fisk, 2010). If the societal problems are addressed then profits will not hurt.

3. Research Methods and Context

The research approach chosen for this study is qualitative as it offers more flexible relationship with the respondent and the data gathered has more depth. The main source of the research data is the primary data. This involves the empirical material collected by the
researcher in the target market that is acquired by 22 individual in-depth interviews. Besides, in Finland, researcher also conducted interviews with the managers of two different cellulose insulation factories to get the important information about cellulose insulation technology, operation and business and also observed one cellulose insulation production plant in Finland.

Cellulose fiber insulation was chosen instead of other insulation technologies because it is environmentally friendly, not detrimental to health like some insulation technologies and this product consists of 75-85% of recycled newsprint and therefore helps in waste management. It is least polluting and, most energy efficient insulation (CIMA 2012).

The researcher conducted semi structured interviews with the representatives of four different categories of people. Each interview lasted for one hour. The respondents were chosen after determining the initial market segments and stakeholder analysis. The researcher divided the stakeholders into four different categories and interviewed representatives from each category. These categories were divided based on the varied roles/responsibilities. Each category was asked different set of questions. These four categories included: 1) people who had knowledge of the construction industry like architects, civil engineers, structural engineers, contractors, construction companies and could provide information about the possibility of accommodating cellulose insulation into existing construction style; 2) decision makers like government officials who could provide information about ways of doing cellulose insulation business with the foreign companies and who were also authority on giving permissions for starting the business; 3) representatives from printing houses to check the raw material availability; 4) housing material retailers who could be the potential buyers.

The researcher used a model for analyzing the qualitative data called Kolb’s learning cycle. ‘The various stages involved in this model are the following: 1) concrete experience: it starts with interview transcripts, feelings, memories, etc.; 2) reflective observation includes three activities which are: familiarization-getting to know the data, spending time with the issues and data and reordering-summarizing the data; 3) abstract conceptualization means to extract concepts which the researcher can recognize; 4) active experimentation: here the researcher looks where the concepts occur, whether there are any patterns in the data, do the patterns emerge from data or the pattern fits the theories or concepts’ (Maylor & Blackmon 2005, 348-49).

While assessing the criteria of the findings like reliability, validity and generalizability, certain things should be noted. Firstly, this research is based on interpretative understanding and qualitative analyses are more or less subjective. Secondly, this research is conducted in Srinagar, the capital city of J&K and the results of the study cannot be generalized to different topographical areas of J&K like Ladakh or Jammu. However, this research could be generalized to the areas of Kashmir valley that have similar climate, construction style and ways of working.

The focus of my research is on the capital city of J&K, Srinagar. J&K is the northernmost state of India. The total area of the state is 222,236 sq. km including 78114 sq. km under the occupation of Pakistan and 42,685 sq. km under that of China. The State is bounded by Pakistan, Afghanistan and China from the West to the East. J&K ranks 6th in area and 17th in population among the States and Union Territories of India. J&K comprises three climatic regions: temperate Kashmir valley, arctic cold desert areas of Ladakh and sub-tropical region of Jammu. While the winter season in Jammu is moderate, the regions of Kashmir and Ladakh face harsh winters. In winter, the temperature in Ladakh ranges between
−20 to −40 degrees Celsius in some regions while in Kashmir the temperature varies between −2 and −8 degrees Celsius (Government of J&K, 2012).

The population of J&K is around 12,548,926. The languages spoken are mainly Kashmiri, Urdu and Dogri. Jammu and Kashmir is the only state in India with two capitals: summer capital, Srinagar and winter capital, Jammu (Government of J&K, 2012).

Srinagar is situated in the centre of the Kashmir valley. It is located 1585 metres above sea level. The population of Srinagar is more than one million which is spread over an area of 294 sq. km (Census of India, 2011).

The climate of Srinagar may be described as a humid continental climate with very warm summers and cold winters. The highest temperature falls around 37 °C and the lowest −14 °C (Government of J&K, 2012).

![Figure 1: Map of J&K](International Blaug 2006)

4. **Results**

4.1 **Demand for Cellulose Insulation technology in Srinagar. A socially driven innovation?**

The people of J&K experience very harsh winters because of the fact that there is limited infrastructure to survive the winters. During this period, the temperature in Srinagar varies from −3 to −10 degrees Celsius while in Ladakh areas it can dip as low as −40 degrees. During this period, all the schools close down because of the lack of the facilities, for example, unavailability of heating systems or electricity. Government is unable to provide continuous supply of electricity throughout the day. Unscheduled load shedding for long hours is a daily affair. The air is as cold inside the house as it is outside. As a result, people wear heavy woollen clothes while indoors as well and carry fire pots with them to keep themselves warm. It is not uncommon to see frozen taps in the houses during winters. All the offices are moved to the winter capital of J&K, Jammu as it has moderate winters. The winter is seen as a season of minimum productivity.

The dry cold weather results in cold related diseases in the entire Kashmir Valley. Ailments like influenza, cough, cold, chest infections are common. However, more serious diseases like
arthriti are also prevalent. Researches have shown that the most common ailment prevalent in the cold regions of J&K is arthritis (Rehman et al. 2004) and this disease is accentuated due to harsh weather conditions as the cold causes stiffness in the bones.

Centrally heated systems used in the developed world during winters in addition to insulated houses make life comfortable while indoors. It is rare to see a centrally heated construction in Srinagar or well insulated houses/buildings. There is no particular reason why the houses should not be insulated in Srinagar.

In the past, main building materials included mud, burnt bricks, timber and stones. The mud houses provided insulating properties and kept the structures warm in winters and cool in summers. However, lately people have started to perceive mud as a poor man’s material and do not use it anymore in the new constructions. In Srinagar, the concept of modern architecture is borrowed from hot areas of India e.g. New Delhi and they do not complement the cold climate of Kashmir (Kashmir Forum, 2012).

The new constructions in Kashmir are usually made of bricks and concrete with very little usage of timber. New styles of using marbles and fancy tiles and huge window panes are considered superior than the traditional designs. Most of these modern materials and techniques may be readily accepted in Kashmir but they do not really fulfill the needs of people living in these extreme climatic conditions.

People in Srinagar do not use any thermal insulation materials for keeping their houses comfortable during the changing seasons. The modern materials that are currently used also prevent the houses from being naturally good insulators unlike old times. Therefore, insulation is definitely needed in the houses for comfortable living and the cellulose insulation is a proposed solution that can bring a positive change in the lives of the people.

The application of cellulose insulation into the construction industry in Kashmir will be an innovation in itself as for most people there, it is a completely novel concept and it can provide tremendous benefits to the people. The author argues that the application of this technology in Srinagar is also social in nature as it has the potential to provide a comfortable living experience to most people.

Cellulose is a green product. It is made of 80-85% recycled newsprint. The fiber is chemically treated with non-toxic borate compounds (15-20% by weight) to resist fire, insects and mold. It is a safe product (Fisette, 2005). Cellulose insulation is sprayed on the walls and roofs of the constructions. It is light and easily distributed to the spaces that would otherwise be impossible to reach. This method of installation makes it possible to effectively insulate even the cramped spaces and cavities. This product is better compared to sheet or roll insulation products as they leave gaps that allow the transfer of air. The R-value (measure of thermal resistance) of cellulose improves during cold weather. Cellulose does not lose its energy saving abilities over time. It does not rot or decay and does not support fungus or mold growth. It also has great acoustic insulation properties and provides great sound proofing (CIMA, 2012).

Cellulose insulation technology minimizes the transfer of air from inside to outside and vice versa and therefore keep the houses cool in summers and warm in winters. Therefore, very little energy is needed to keep the houses warm as the hot air will not escape like it does in the constructions today due to lack of any insulation.
Considering the broad definitions of social innovation ‘doing public good’ (Centre of Social Innovation, 2010) and ‘improving the quality of life’ (Pol &Ville, 2009), the application of Cellulose Insulation technology in Srinagar very well demonstrates these characteristics as it could potentially provide better and comfortable lives to the people of Srinagar. It can definitely have economic and environmental benefits as well that are further described in the next section.

4.2 Cellulose Insulation - A sustainable technology and business

The cellulose insulation business in Srinagar has the potential to be a sustainable business that could not only bring economic prosperity to the state but also assist in saving energy and solving waste management problems.

4.2.1 Cost-effective business

The cellulose insulation business could be a profitable business that could yield good returns in Srinagar. However, it was observed that the raw material prices in Srinagar were higher than for instance in Finland but the cost of the end product could still be lower due to other cheaper inputs like labor and electricity and if purchased from neighboring state, New Delhi.

During the field research, the raw material availability was examined. The main raw materials for the cellulose fiber insulation are waste newspapers and chemicals. It was observed that in Srinagar the cost of one tonne of paper ranges between €180–€200. For example, in Finland, the waste newspaper tonne that is imported from other countries costs between €70–€100. Even though, the raw material prices are high in Srinagar, the cellulose insulation business can still be profitable due to the low costs of labor and electricity. Labor costs less in Srinagar than any western country. Blue collar workers work at the rate of €6 per day while as for the service sector employees the salary does not exceed €600 per month. This price is a lot less than labor rate in the western countries. For example, in Finland labour rate varies between €8–€15 per hour (Työsuojelupiirit, 2012). The tariff of electricity/kWh in industrial estates in J&K is as low as € 0.06 while in Finland, for example it is €0.14 (Global Energy Think Tank, 2012).

Srinagar city has the potential to offer two tonnes of newsprint per day. The waste newsprint if collected properly from rest of J&K would be enough to run this production unit. Further, raw material costs and availability were also checked from New Delhi and it is also possible to purchase the waste newsprint from there. In New Delhi, the waste newspaper tonne can cost around €90–100. In addition, the chemicals needed for making cellulose insulation could also be purchased in bulk from New Delhi at low prices.
The following table shows the cost calculation of 1 kg of cellulose insulation as per the prices of raw material found in New Delhi.

<table>
<thead>
<tr>
<th>Inputs</th>
<th>€</th>
<th>kg</th>
<th>kg price</th>
<th>€/kg cellulose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper 85%</td>
<td>93</td>
<td>1000</td>
<td>0.093</td>
<td>0.07905</td>
</tr>
<tr>
<td>Borax 7.5%</td>
<td>780</td>
<td>1000</td>
<td>0.78</td>
<td>0.0585</td>
</tr>
<tr>
<td>Boric Acid 7.5%</td>
<td>830</td>
<td>1000</td>
<td>0.83</td>
<td>0.06225</td>
</tr>
<tr>
<td>Logistics 10%</td>
<td>30</td>
<td>1000</td>
<td>0.03</td>
<td>0.0054</td>
</tr>
<tr>
<td>Bag for cellulose</td>
<td>0.17</td>
<td>14.5</td>
<td>0.011724</td>
<td>0.011724138</td>
</tr>
<tr>
<td>Labour</td>
<td>60</td>
<td>6000</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Rent</td>
<td>1000</td>
<td>140000</td>
<td>0.0008</td>
<td>0.0008</td>
</tr>
<tr>
<td>Electricity (100kwh/tonne) @0.06c/unit</td>
<td>6</td>
<td>1000</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>0.2337/kg</td>
</tr>
</tbody>
</table>

Table 1: Cost calculations for manufacturing 1 kg cellulose based on the prices in New Delhi. (Conversion rate 1€ = INR 65, Source: Forex: 6.9.2012)

It was discovered that even with the high prices of raw materials, 1 kg of cellulose can be manufactured only at 0.2337. Further, it was found out that if the cellulose insulation in priced at 60.50 / kg, it is still considered affordable. Therefore, this business has the potential to be profitable in Srinagar. The cellulose insulation business has proven to be quite profitable even with high labor costs in the west. Insulation business in Srinagar or whole Kashmir valley is also potential profitable business that can yield good returns.

4.2.2 Eco-friendly Technology

The government of J&K encourages the use of green products and the fact that cellulose insulation building material is made from recycled newsprint can provide this business with great support from the government. The cellulose insulation technology, being very efficient and eco-friendly, suits J&K as it produces billion kilograms of useful cellulose insulation material from waste paper per year and protects the environment at the same time. It is a high performance product that excels in harsh weather conditions and provides excellent fire protection and great acoustic properties (CIMA, 2012).
J&K like other parts of India faces tremendous waste management problems. More than 380 metric tonnes of garbage are generated per day in Srinagar. The manpower and the machinery of Srinagar Municipal Corporation (SMC) is not enough to cater the requirements for 100% collection of waste. At present, only 60% of total waste generated is being collected (SMC, 2012). The untreated municipal and industrial waste is being discharged directly into the water bodies. The cellulose insulation technology could help to resolve the waste management problem in J&K by utilizing tonnes of waste newspapers that otherwise end up in landfills and release greenhouse gases while being decomposed (CIMA, 2012).

### 4.2.3 Energy Efficiency

Insulating a house can save 45-55% of heating and cooling energy. Insulation helps in the reduction of energy bills and can save up to 45-55% of heating and cooling energy consumption. Due to the less need to heat or cool the well-insulated house, energy gets saved (Sustainability Energy Authority Victoria (SEAV), 2012).

<table>
<thead>
<tr>
<th>Extent of Insulation</th>
<th>Heating</th>
<th>Cooling</th>
<th>Heating and Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling only (added R2.5)</td>
<td>15–25%</td>
<td>30–45%</td>
<td>20–30%</td>
</tr>
<tr>
<td>Ceiling (added R2.5) and walls</td>
<td>40-50%</td>
<td>40-55%</td>
<td>40-50%</td>
</tr>
<tr>
<td>(added R1.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceiling (added R2.5), walls</td>
<td>45-55%</td>
<td>35–50%</td>
<td>45-55%</td>
</tr>
<tr>
<td>(added R1.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and floor (added R1.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Typical energy savings due to insulation (Source: SEAV, 2012)

The expenditure on electricity and other forms of energy in Srinagar could definitely be reduced if the houses are insulated. Due to the un-insulated houses or buildings, the hot or cool air in the premises easily escapes through the un-insulated walls/ roof as well as windows. According to the one of the experts interviewed in J&K, the timber generally used in the constructions in Srinagar is not well seasoned which could change the shape and leave gaps. Hot or cool air easily escapes through these gaps. The cellulose fiber insulation is an effective way to improve energy efficiency of a house. Cellulose is an effective air-blocker which provides R value of 3.5 per inch of thickness. It is cost effective, thermally efficient and a comfortable solution (Fisette, 2005).
4.3 Srinagar, J&K as a market area for Cellulose Insulation Business

Srinagar offers great potential for cellulose insulation business. During the field research, it was observed that all the interviewed experts believed that insulating the houses is a necessity in Srinagar and the fact that they are not currently installing it is because of the lack of availability of such technologies in the market. In addition, they also mentioned about the lack of awareness among the common masses. They pointed out that if they recommend people to insulate their houses, people will consider it. Also, once the awareness increases and people see the benefits themselves, this business will be successful.

Srinagar is the prime target for the cellulose insulation business but it does not limit there. Once the business is established in this area, it will be extended to other districts of Kashmir that possess similar geographical conditions. Ladakh is also identified as a potential market due to the extreme weather conditions.

In Srinagar, there is hardly any competition for the cellulose insulation technology. There is no real insulation business activity going on in the city. Fiberglass plates are available in the market but they are brought from neighbouring states. These fiberglass plates are mostly used as roofing materials rather than insulating agents. This cellulose insulation production unit will be the first in the city.

The government of J&K encourages green businesses and also the construction of small and medium sized industries and offers attractive incentive packages to the local as well as foreign investors. For the development of the industrial sector, government is offering loans at low interest rates that are easy to access. It provides grants and funding, minimal taxes, no VAT on the finished goods, income tax exemption for ten years after starting an industry and so on (JKSIDCO, 2004).

There are also certain weaknesses associated with setting cellulose insulation business in Srinagar. Although the support from the government is strong, the Kashmiri society at large does not have any awareness about the insulation industry. People are not familiar with the insulation industry and the benefits that insulation provides. Although there is a need for insulating the houses, people do not act accordingly because they are unaware of the existence of such products. Awareness has to be generated among the masses regarding the insulation. This knowledge can be disseminated to the common masses by the architects and engineers.

Another finding was that common people cannot afford high prices. The target customers of cellulose insulation could be middle and high income people. For those middle income families that may be willing to spend a portion on insulating their houses, the maximum amount that they spend should not exceed INR 2 lac/ €3000 for a medium sized house. Therefore, the cellulose insulation product has to be priced as per the affordability of the people.

Another challenge that may be faced while insulating the structures in J&K is that the construction style is different than the countries that deal with cellulose insulation like Europe or USA. The cellulose installers may face some challenges. It is important to check the constructions/buildings in J&K beforehand in order to avoid any problems. Once the constructions are properly studied, the experts can adopt alternative ways for installing the insulation. Changes may need to be made to suit the local architecture.
In addition to the strengths and weaknesses of the cellulose insulation business in the valley, there are some threats too like political situation, corruption and weak IPR protection.

First of all, the political situation in J&K can be a threat to the business. J&K has been a flashpoint between India and Pakistan for more than 60 years. India administers approximately 43% of the region. Pakistan controls approximately 37% of Kashmir and China controls 20% of Kashmir. India's official position is that Kashmir is an ‘integral part’ of India. Pakistan's official position is that Kashmir is a disputed territory whose final status must be determined by the people of Kashmir. Certain Kashmiri independence groups believe that Kashmir should be independent of both India and Pakistan. Kashmir has been the cause of three wars between India and Pakistan. Since the 1990s, the Indian administered J&K has been hit by confrontation between Kashmiri separatists, and the Pakistan Armed Forces, and Indian Armed Forces which has resulted in thousands of deaths (The Washington Post, 2012).

The prevailing political disturbances in the city may hinder the smooth operation of the business. Sometimes, the strikes occur in the valley which disrupts the normal working life.

Banks offer export credit guarantees. It covers political risks related to the foreign markets. The common political risks covered are restriction on transfer of credit currency, rescheduling of debts, expropriation and war or insurrection (Finnvera, 2012). The companies that are interested in doing business in India can apply for such guarantees and save their businesses from political risks.

Secondly, corruption can be a biggest concern while doing business in J&K. J&K is considered as one of the major corrupt states in India. Like other parts of India, the relief released by the central government for the welfare or promotion of certain sectors never reaches the people. The research done by the Central Vigilance Commission in India reported that nearly 50% of Indians who use government services pay bribes. The state officials misappropriate the funds (Central Vigilance Commission, 2012). The foreign companies should be diligent about such issues. They should comply with Indian anti-corruption guidelines and be familiar with applicable anti-corruption regulations in India and also form trusted relationships with people in India who are familiar with corruption issues.

Lastly, weak IPR protection can also be a concern. India operates a system of registration for IPR and is a signatory to various international IPR treaties. However, small companies may not follow the regulations about IPR and thus India has become a high-risk area for IPR theft. In order to avoid IPR theft, foreign investors should contact IPR regulating authorities in India and make sure that their IPR is protected when they are exposed to the Indian market. Foreign investors should also make specific provisions about this in their joint venture agreements (Madaan, 2012).

5. Implications for investors

Due to the continuing financial distress in the west, the businesses need to execute market needs effectively on a global scale. Western companies need new ways of doing business and
shift to resilient and sustainable business models. As mentioned previously, insulation industry is not well established in J&K, India but these products are very much needed. The cellulose insulation companies from the west could avail this opportunity and introduce their technologies to J&K, India and those companies that take the lead now will have better chances to succeed.

It is a win-win situation for both India and the west. The western cellulose insulation companies can find new markets for their products, internationalize and grow their businesses while the Indian construction industry will get modernized by utilizing the western environmentally friendly technologies and the thermally insulated constructions can provide comfortable living to the Indian people. Further, the companies with green technologies such as cellulose insulation technology will receive great support from the government of India like attractive incentive packages.

Below are some recommendations for the investors who want to invest in cellulose insulation business in Srinagar.

5.1 Entry Strategy

The company with cellulose insulation technology should develop partnership with a company in Srinagar, India and establish a joint venture company there. The partner needed for the cellulose insulation company should be able to finance this project alongside the foreign company, have expertise in the construction business and already established networks in Srinagar.

After entering into a joint venture with the company in Srinagar, the foreign company can enjoy all the benefits of a local Indian company. Joint venture is considered to be a best entry mode in this case as it will allow both the parties to share the investment costs and risks together. In addition, by working with the local partner, the foreign company can get easier access to the markets in Srinagar. The local partner will have in-depth knowledge of the market and be acquainted with the culture and language.

Joint Venture Operations

The joint venture company established in Srinagar can receive the technology and know-how from the foreign company. Both the partners can together invest in starting production of cellulose insulation in Srinagar. The foreign company will be responsible for providing the technology and marketing know-how and training to the employees in Srinagar and the partner from Srinagar will be responsible mainly for the management and the marketing in Srinagar.

5.2 Production Unit

The foreign company and Indian company together can establish a production unit in Srinagar. As per the article 370 of the Indian constitution, only the people of J&K can own immovable property in J&K. Therefore, only the local partner from Srinagar can purchase the land. It is advisable not to purchase the land but rather lease it from the government. The Industrial Estate in Kashmir division of J&K is a most suitable place for setting up a production unit.
The following table shows the industrial estates and their locations in different districts of Kashmir.

<table>
<thead>
<tr>
<th>Location of Kashmir</th>
<th>Industrial Estates in Kashmir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Srinagar</td>
<td>Khonmoh – Industrial Estate</td>
</tr>
<tr>
<td>Budgam</td>
<td>Rangreth EPIP Ompora</td>
</tr>
<tr>
<td>Pulwama</td>
<td>Lathipora IGC</td>
</tr>
<tr>
<td></td>
<td>Lassipora- Growth Centre</td>
</tr>
<tr>
<td>Baramulla</td>
<td>Doabgh - Food Park</td>
</tr>
</tbody>
</table>

**Table 3: Locations of Industrial Estates in Kashmir Division**

*(J&K State Industrial Development Corporation 2012)*

In Srinagar, the company can set up the production unit in one of the Industrial Estates. The government provides many incentives to the members of these industrial estates. Firstly, the land costs are minimal compared to other areas. In order to use the land, one-time payment of €3000–€4000 for 506 sqm has to be made. In addition, annually the company has to pay about €50. The company can use this land for a period of 90 years. Secondly, the electricity costs are very low in the industrial estate. €0.06/ unit price is quite low compared to electricity prices in other areas. The building costs of production unit can vary depending upon the materials used. The approximate costs can be €14,000- €16,000.

**5.3 Target segments**

The target segments to market the cellulose insulation product could be classified as primary and secondary segments. The primary segments or buyers are construction companies, government, housing material retailers and individual households. The secondary segments that are equally important as they could highly influence the primary segments include architects, civil engineers and structural engineers. The largest target segment is the middle income group as the majority of the construction volume in Srinagar relies on the constructions of residential houses of middle income people.

According to an interviewee, every year nearly 1000 residential houses are built in Srinagar. In 2006, 15,000 houses were built in Srinagar municipality. The opinions of the experts show that major contributors of the construction volume in Srinagar are the residential houses. Both the existing residential houses and the new ones can be targeted.

The residential houses are built by middle and high income households while the majority of these houses belong to the middle income group. If the company targets this segment, it can automatically reach the high income group.
Figure 2: Target Segments for Insulation business in Srinagar

5.4 Pricing Strategy

The company should enter the market with low price. Low price should be set as the income level of the people cannot be ignored. By pricing the product low, the targeted customers can manage to pay and the customer base will be large. The company can also raise barriers against the entry of prospective competitors and increase its market share and obtain large sales.

The affordable price of cellulose for a two storey house that is built on 1500–1800 sq feet is €1500 to €3000 for the middle income group. If the cellulose insulation is priced at €0.50/ kg, it becomes affordable as the total material for the entire house will cost in between €1500 to €3000.

5.5 Raw material suppliers

Since the raw materials needed for cellulose insulation are newspapers and chemicals, the researcher interviewed the printing agencies, newspaper collectors and chemical providers. From the printing presses in Srinagar, it was found out that daily circulation of newspapers is around 30,000–40,000 for big newspaper companies. Small ones sell 4,000 to 5,000 daily. There is not much waste paper availability at the printing presses. 20–30 kg daily can be obtained at one press. They sell it to the waste paper collectors who further sell it at INR 12–15 or €0.18–€0.22. The total waste newspaper availability in Srinagar city per day will be around 2 tonnes. As this quantity is not enough to operate a production unit, there are two options for the company: a) to organize waste management operation of its own and collect the waste paper from other districts across J&K; b) to purchase the wastepaper from New Delhi.
The wastepaper prices in New Delhi are much cheaper than in Srinagar and there is enough availability of the paper. It is possible to get the newspaper from Delhi at €0.093/kg.

The benefit of the first option is that the company may be able to get the wastepaper at only INR 5/kg or €0.074 or lower if it collects directly from the people. The disadvantage is that the company has to put a lot of time and effort into this process. The second option also has strengths and weaknesses. The strength is that the company does not have to stress about organizing the wastepaper management and can concentrate on its core business of producing the cellulose insulation. The weakness is that there will be logistics costs involved in the case of transporting the paper from New Delhi to Srinagar.

On the basis of the results of this research, it appears that the second option might be more appropriate as the company can focus on its core business. Besides, 90% of the logistics costs will be reimbursed by the government of India for the first five years from the date of registration of the company (JKSIDCO, 2004).

The chemicals also are found in limited quantities in Srinagar. Therefore, they have to be purchased in bulk from Delhi or other neighbouring states of J&K. It is possible to get these chemicals at INR 56/kg or 0.82c/kg from Delhi. However, these are not the standard prices as the prices vary with suppliers. Bargaining with the suppliers is possible.

5.6 Effective Promotion

Effective promotion is the key to the success of the cellulose insulation business in Srinagar. The promotional mix will be comprised of publicity, informative advertising, sales promotions etc. Firstly, an educative session for the experts could be conducted in Srinagar. The purpose of this seminar will be to inform them about the benefits, features and uses of cellulose insulation. If the experts get convinced, it is easier to convince the common masses.

Secondly, the company could insulate a structure using cellulose insulation and demonstrate its benefits to the customers. For example, it could demonstrate the changes in the room temperature or humidity level outside and inside the structure so that the customers can really see the benefits of cellulose insulation. This promotion could receive good attention from the people and have a positive impact on them. Thirdly, the demand for the cellulose insulation needs to be created by generating commercially significant news about it in the big newspapers of Srinagar. Getting media publicity by providing press releases to the local media is an excellent way to promote cellulose insulation in a professional manner. Finally, the company should also make a favourable presentation of the product and air it on radio as well as local television channels and cable operators. The company can promote this product by advertising through radio, television and print media. Since the government of India will reimburse all the costs on the brand promotion for the first three years, the company can spend well on the promotion. Government of India can pay up to INR 20 Lac/ €30,769 in the first year, INR 15 Lac/ €23,076 in the second year and INR 10 Lac/ €15,384 in the third year (J&K, SIDCO, 2012). (Conversion rate 1€ = INR 65, Source: Forex: 6.9.2012)
5.7 Distribution Strategy

In the beginning, the company should directly sell the cellulose insulation from the production unit. Direct selling is recommended as it will help the manufacturers to keep the costs down as the middle men will not be involved and the end product could be cheaper. Further, it will also save the problems of transportation in case of long distribution channels. Once the business starts to grow, it can set up its own retail shops all across Kashmir valley.

5.8 Suggested Business Model

Below is a business model that the foreign cellulose insulation company could follow in order to achieve success in Srinagar. This business model is based on the recommendations described earlier.
Figure 4: Suggested Business Model
6. Conclusion

This research draws attention to the importance of insulating the houses in the northern regions of India especially the colder regions of J&K. The people living in these areas who have limited facilities to face the harsh winters could also experience comfortable living if their houses are well insulated and warm during winters. The development of insulated structures will not only benefit people but also give an opportunity to the foreign investors to establish insulation business in the cold areas of India. The cellulose insulation technology is viewed as a socially driven innovation as it has the potential to improve the quality of life of the people of J&K by protecting them from cold and illnesses during winters. This technology could meet their needs and address a challenge of uncomfortable living during winters. It is a novel idea for the people of J&K and if turned into practice, it could reshape their lives.

The establishment of cellulose insulation business in this area will prove to be a sustainable business that will not only save energy by reducing the electricity bills of the inhabitants and assist in the waste management but it will also produce economic benefits for the state. It could be a sustainable business that not only brings about environmental benefits but also social and economic prosperity.

The research establishes that there is a huge potential for the insulation business in Kashmir as there is hardly any competition in this sector. Lack of availability of the insulation materials in the valley was the main cause of its unusability. Today, people do not use insulation products even though they spend generously on other construction material. It is possible to say that if insulation products are available in the city and people realize their importance, they will show willingness to insulate their houses as long as the price of the product is affordable.

The governments of India and J&K offer attractive incentive packages for the industries that plan to set up ventures in Srinagar. The raw material needed for the cellulose insulation product can be obtained from the neighboring states of J&K especially New Delhi or from all the other districts. Some threats to the business are also identified which include the political disturbances in the valley, corruption, weak IPR protection etc. However, these threats could be minimized.

The researcher has made some recommendations for the foreign investors who may be interested to pursue this sustainable business. First of all, by entering into a joint venture with the Indian partner, the foreign company will get all the benefits and incentives offered by the Indian government. Further, it can delegate the job of marketing and management completely to the Indian partner in Srinagar. In addition, the local partner will have the knowledge of the market in Srinagar and will be acquainted with the culture, language and the way things work in that market. The most important benefit is that there will be resource sharing and both the partners will share the risks and the profits together. Second, setting up a production unit in the Industrial Estate in Srinagar instead of any other place is preferred due to the attractive incentives government offers to the members of the industrial estate. Low electricity costs, low land costs, subsidies, tax reductions etc. are some of the benefits. Third, if the company targets the middle income households who construct residential houses, it will tap the biggest segment. Every year thousands of houses are being built in Srinagar mostly by middle income group. In addition, the company can also target other segments as well.
Fourth, the company should enter the market in Srinagar with a low penetration price of cellulose insulation product. The affordable price would be €0.50 per kg for the cellulose insulation. Keeping the price of the cellulose insulation product down is very important in Srinagar as the low income levels of people cannot be ignored. Fifth, the company should obtain the raw materials from New Delhi instead of Srinagar. It will be better as the company will get the raw materials at cheaper price which will eventually help in keeping the cost of the end product down. Sixth, effective promotion techniques are mandatory for the company as the cellulose insulation product will be a new and unsought product in Srinagar and if it is not promoted in a desired way; its success may be hindered. The best ways to market the cellulose insulation product include conducting educative seminars directed towards technocrats, government and construction companies, insulating test structures and demonstrating its benefits, getting media publicity by providing press releases to the media and also by advertising this product through radio, television and newspapers. It is important to promote the product to the decision influencers like architects and engineers as they have the power to convince the common masses. Lastly, the company in its initial years could sell the product directly from the production unit and later on open its own retail shops instead of selling it to the distributors or retailers. The reason is that as it will save the problems of transportation in case of long distribution channels and can manage to cut the costs of the middlemen and the customer will get the product at a cheaper price.

This research mainly focused on the opinions of the experts like architects, engineers, government and construction companies, how they viewed the cellulose insulation product and what they anticipated about it. Further, it only focused on a single district of J&K, which is Srinagar. This research did not tap the interests and opinions of the common masses—people who would be the biggest customers for this product. A future study may be suggested that should be directed towards the middle and high income residents and it should be aimed at this group across the whole Kashmir valley and Ladakh area. This research would give a clearer picture of the people’s willingness to use this product.

References


Publication II

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opportunities for social innovations

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Towards realising social sustainability in the small hydropower sector in India: opportunities for social innovations

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Abstract: This paper investigates the SHP sector in India and aims at finding out its contribution towards realising social sustainability and if there are any opportunities for generating social innovations. Various stakeholders connected to the SHP industry were interviewed in four states of India to explore the existing situation of this industry. The data was acquired through 28 individual in-depth interviews, group discussions and direct observation of one SHP plant. The results of this study indicate that social sustainability is being realised to a certain extent in the SHP sector. However, efforts have to be undertaken in order to call this sector completely ‘socially sustainable’. In addition, both benefits and challenges are highlighted and recommendations towards a socially sustainable SHP sector are provided. Further, this research also studies the challenges as opportunities for social innovations.

Keywords: small hydro power; SHP; social sustainability; social innovations; India; challenges; opportunities.


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1 Introduction

A large number of definitions of sustainable development have emerged so far. In a broader context, the notion of sustainable development entails three interrelated...
Towards realising social sustainability in the small hydropower sector

dimensions: social equity, economic prosperity and environmental quality (Soyka, 2012). In other words, sustainable development is an attempt to combine concerns about the environmental issues with socio-economic issues. Sustainable development is the development that addresses the challenges for humanity, now and into the future (Brundtland, 1987; Hopwood et al., 2005). It is all about creating a system that provides for the quality of life while taking care of all the three pillars of sustainability: environmental, social and economic. The goal of sustainable development is to integrate the economic, social and ecological impacts of our patterns of production and consumption into the forms of development that are designed for long-term sustainability (Kleef and Roome, 2007). Social sustainability, therefore, is considered to be of significant importance in the overall concept of sustainability as it is the human beings that determine the economic and the environmental well-being (Magis and Shin, 2009).

In the similar context, social innovations also prioritise the human welfare and work towards a sustainable society. They are continuously looking for answers to many different social problems by delivering the new services that improve the quality of life of individuals and communities (Social Innovation Europe Report, 2012). They could be any new strategies, ideas or concepts that benefit the society and meet the basic social needs. Social innovation and sustainable development are inherently linked together. The sustainable thinking and the increased awareness of the individuals can eventually lead to various social innovations. The changes in the behaviour of individuals, institutions and organisations are necessary for sustainable development (Dobson, 2007). At the same time, these changes are responsible in shaping and bringing about various social innovations. The criteria for sustainability are critical for the success of social innovations. This study investigates one of the sustainable energy businesses that is small hydropower (SHP) sector in India. SHP is considered to be one of the most cost-effective energy technologies to be considered for rural electrification in less developed countries (Paish, 2002). SHP provides electricity to the remote and thinly populated areas that are otherwise devoid of electricity. A lot has been written about the green energy technologies and businesses so far. However, social sustainability and social innovations thus realised due to these green energy businesses in the emerging markets have not been subjected to empirical analysis. Therefore, this paper aims at finding out whether the SHP sector in India is instrumental in realising social sustainability to some extent and if there are any possibilities for the generation of social innovations. This research answers the questions: How is social sustainability achieved through the development of SHP sector in India? Are there any possibilities for the generation of social innovations?

The main contribution of this study is that it shows the possibility of achieving social sustainability through green energy businesses and it also studies the potential for the creation of social innovations.

2 Small hydropower in India

India’s national average per capita electricity consumption is very low at 778.63 kWh (Ministry of New and Renewable Energy (MNRE), 2012). The government needs to utilise every available source of power generation. In this context, the development of hydropower is considered to be of high significance. Hydropower is the renewable energy source where power is derived from the energy of water moving from higher to
lower elevations. Hydropower projects are categorised into two segments: large hydro and small hydro (Ghosh et al., 2012). This classification of hydro-electric projects depends upon the installed capacity which is different in every country. To date there is still no internationally agreed definition of ‘small’ hydro; the upper limit varies between 2.5 MW and 25 MW (Paish, 2002). In India, SHP refers to hydro-electric projects with capacity generation of less than 25 MW. SHP plants can also be classified according to their functions and based on the source of water, as run-of-river, canal-based and dam toe schemes (Singal, 2009). Among other renewable energy generation sources, SHP has a potential to play a critical role in improving the overall energy scenario of India especially for the remote and inaccessible areas (MNRE, 2012). SHP is the second largest source of renewable energy installed in India after the wind energy. It offers significant potential for carbon emission reductions (Intergovernmental Panel on Climate Change, 2011). India has a tremendous hydropower potential that has not been completely harnessed. In India, an estimated potential of 15,384 MW for SHP plants has been established and a capacity of 3300 MW has been installed so far. The government has planned to increase the SHP installed capacity to 8500 MW by the end of 2021 (MNRE, 2012). SHP projects are considered to be the property of the State governments in India. The private developers are permitted to maintain, own and operate SHP plants for 40 years after which they revert back to the state governments where they are installed. In India, since 1994, private sector has been encouraged to set up commercial SHP projects and utmost efforts are being made to promote the development of SHP. Currently, the SHP projects in India are essentially private investment driven and this sector is handled by the MNRE. The government is trying to attract investors by providing good incentives for the development of its hydropower (Kumar, 2007). Twenty three states of India have announced policies for setting up the commercial SHP projects through private sector participation.

3 The notion of social sustainability

The literature completely devoted to social sustainability is limited while the broader literature finds its roots in the concepts like social capital, social cohesion, social inclusion and social exclusion (Dempsey et al., 2009). Integrated policies for sustainability with equal emphasis on the social sustainability need to be developed as they are still lacking. Much more emphasis on the social dimension of sustainability should be made by the decision makers as well as the scientists (Omann and Spagenberg, 2002). The field of social sustainability includes broad and multilayered literature from various disciplines and it needs to be viewed through multiple subject matter lenses. Expertise from the fields as anthropology, sociology, cultural studies, public administration, political science, social work, economics, business, architectural, environmental studies, public health, and engineering are required (Hopwood et al., 2005). According to Western Australia Council of Social Services (WACOSS), “Social sustainability occurs when the formal and informal processes, systems, structures, and relationships actively support the capacity of current and future generations to create healthy and liveable communities” (McKenzie, 2004). The four emergent principles of social sustainability are human well-being, equality, democratic government and democratic society. Human well-being ensures the protection of basic needs, equity
ensures mechanisms to guarantee equitable sharing of society’s benefits and costs, democratic government ensures that the governance is oriented to the people and the democratic society empowers people to build democratic government (Magis and Shinn, 2009). Further, the civil society is of great importance to both democracy and sustainability. All the three concepts are interrelated and complementary, and none can survive without the other (Magis and Shinn, 2009). Social sustainability also focuses on the concept that the future generations should have the same or greater access to social resources as the current generations, and at the same time allows for equal access to social resources within the current generation (Vavik and Keitsch, 2010). Socially sustainable communities are equitable, diverse, connected, democratic and provide a good quality of life (McKenzie, 2004). According to Larsen (2009), “Social sustainability must (a) build inclusion at the level of the individuals, groups and society; (b) provide for basic human dignity which includes at least basic human sustenance, freedom from tyranny, freedom of association, and basic human liberty; (c) provide a means for people to influence their governance and (d) create the capacity for learning at the level of individuals, groups, collectives, governments, corporations and society.”

In short, “Social sustainability could be understood in the light of various principles like good quality of life, equitable opportunities for all its members, encouragement of diversity, social cohesion or promotion of connectedness within and outside the community, democracy and governance and maturity whereby an individual accepts the responsibility of consistent growth.”(McKenzie, 2004)

Based on the above mentioned principles described by McKenzie (2004), it can be assumed that the social sustainability of any business can also be evaluated in terms of the basic tenets of social sustainability like human well-being, good quality of life, equal participation, democracy, diversity, social inclusion, and stakeholder relations. Littig and Grießler (2005) mention three core indicators to assess social sustainability which are:

- basic needs and quality of life
- social justice
- social coherence.

According to Thomsen and King (2009), the indicators that can be used to assess social sustainability of a business are workplace practices, safety, training, support for the larger community, stakeholder engagement, community giving and customer engagement. Social sustainability covers the broadest aspects of business operations and the effects that they have on employees, customers, suppliers, investors, local and global communities. It is also focused on respecting social diversity (Vavik and Keitsch, 2010). The idea of social sustainability is interpreted as the ability to continue to stay in business through good relations with its stakeholders (Brown et al., 2006). A socially sustainable business ensures that healthy relationships are maintained with all its stakeholders like the employees, customers and community members. Some of the questions that every socially sustainable enterprise should consider are:
How can we increase the engagement of the stakeholders?

What can we do to improve the health of stakeholders?

What could be done for community well-being? (Thomsen and King, 2009).

A socially sustainable business, therefore, contributes to the healthy environment and resilient communities. Further, sustaining a business also requires analysing the dynamics of the interrelations between the ecological system and the social system (Haywood et al., 2010). Socially sustainable businesses can contribute to the worthy goal of sustainability by improving the social conditions of people, communities and society at large. They incorporate sustainability principles into everyday practices of a business – from the fringes to the heart of the business (Fisk, 2010; Weybrecht, 2010).

4 The notion of social innovation

Social innovation has not been explored extensively as a research area (Mulgan et al., 2010). However, the field is advancing rapidly and there is a growing interest on this subject across the globe (Howaldt and Schwarz, 2010). A decade ago, the term ‘social innovation’ was rarely used by the academia. Social innovation has been used in a variety of different ways like social entrepreneurship that in itself is not necessarily innovative but it could be a means to innovation, social responsibilities of business organisations, social processes of innovation, social side of technological innovation, innovation in public policy and governance (Westley, 2008). However, the concepts related to social innovation have been discussed by the great minds from the 19th century itself. Recently, this term is being widely used in the innovation studies. Numerous social innovation institutes have been set up by many universities across the world. All of them are attempting to understand this concept in their own ways. As a result, the term ‘social innovation’ has been interpreted in various and overlapping ways in different disciplines (Pol and Ville, 2009). Despite numerous interpretations, everyone agrees on the notion that social innovation benefits the society and helps in achieving the social needs. Social Innovation in a broad context could be defined as public good, benefiting people or Earth (Centre for Social Innovation, 2013).

According to the Social Innovation Europe Report, “Social innovations are new ideas, institutions, or ways of working that meet social needs more effectively than existing approaches. Often, social innovations involve the remaking and reuse of existing ideas: the new application of old ideas or the transfer of an idea from one part of the world to another” (2012). Another interesting way to understand social innovation is through the theory of connected difference. It emphasises on three key dimensions of social innovations. Firstly, they are new combinations rather than completely new. Secondly, their practice involves cutting across organisational or disciplinary boundaries and lastly, they leave behind compelling new social relationships between previously separate individuals and groups (Mulgan et al., 2010). Social innovations could be understood as either any type or intensity innovations that deliver a clear social impact or a set of impacts to both the society and the economy (Cernikovaite and Lauzikas, 2011).
5 Research methods and context

This paper focuses on investigating the SHP sector in India and analyses its potential for bringing about social sustainability. Qualitative research method was chosen for this study. Semi-structured interviews were conducted with the key stakeholders of the SHP industry in India. The interviewees included the independent power producers (IPPs), manufacturers, designers, consultants and representatives of various government organisations that were involved in the development of the SHP sector in India. This empirical material was collected in the four states of India namely New Delhi, Himachal Pradesh Uttaranchal and Jammu and Kashmir (J&K) in the February, 2013. The data was acquired through 28 individual in-depth interviews. Each interview lasted for about 40 minutes to one hour, and the questions mainly dealt with the social issues, sustainability perspectives, innovation perspectives, obstacles and best practices of SHP sector in India. The questions varied according to the different stakeholders who were interviewed. After a few interviews, as the researcher’s understanding of the topic broadened, more specific questions were added to the interview transcripts. The interviewees were chosen meticulously to get the overview of the SHP sector in India. It was important to take the perspectives of all the key players into account. The semi-structured interview method was chosen for this study as the researcher needed more detailed information and in-depth data about the SHP industry as this field was unknown to the researcher.

Besides the formal interviews, the empirical material was also acquired through direct observation of the Drang power house, one SHP plant in J&K, group discussion at the Directorate of Energy in Himachal Pradesh, participation in lectures at SHP training programme held in IIT-Roorkee and some interaction with the local people of Himachal Pradesh. Himachal Pradesh, J&K and Uttarakhand were chosen as research areas as these states offer tremendous potential for SHP in India. Further, New Delhi was selected since all the major consultants of SHP and manufacturers of SHP technologies are localised in this region. SHP sector was preferred because SHP units produce positive social benefits to the local communities. They encourage community participation and capitalise on local skills for plant constructions. Also, the researcher has an interest in green energy businesses in the emerging markets especially India.

The data was analysed according to the principles of qualitative content analysis. The interview transcript had 25 questions. Every question was formulated carefully and all the responses were taken into consideration while analysing. The transcripts were read and the interview tapes were listened to many times until the quality data was collected. This data was arranged into categories. The main categories were social sustainability and social innovation. While categorising the data, sub categories were generated. For example, human well-being, stakeholder relationships, equal participation, democracy were the sub categories under the category of social sustainability. Under the social innovation category, the sub-categories that were formed were best practices and challenges. After categorising the data, the connections were formed between categories and then the relationships between the categories were identified. During the analysis, special attention was drawn towards realising whether there were any possibilities to achieve social sustainability and the creation of social innovations in SHP sector within India. The qualitative analysis tool ATLAS.ti was used to analyse the data. Table 1 shows the interview themes and the example questions.
### Table 1: Example questions

<table>
<thead>
<tr>
<th>Category</th>
<th>Interview themes</th>
<th>Example questions</th>
<th>References</th>
</tr>
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<tbody>
<tr>
<td><strong>Background data</strong></td>
<td></td>
<td>What is your position in the organisation?</td>
<td>Cernikovaite and Lauzikas (2011)</td>
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<td></td>
<td></td>
<td>How long have you worked for the organisation?</td>
<td>Centre for Social Innovation (2013)</td>
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<td></td>
<td></td>
<td>What is your role in the SHP industry?</td>
<td>Howaldt and Schwarz (2010)</td>
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<tr>
<td><strong>Social Innovations</strong></td>
<td>Definition</td>
<td>How do you define social innovation?</td>
<td>Mulgan et al. (2010)</td>
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<td></td>
<td></td>
<td>Have you heard of any social innovations in the SHP sector in India? Can you give any examples?</td>
<td>Phills et al. (2008)</td>
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<td></td>
<td>Best practices</td>
<td>Could you give me an example of any positive change that has happened in any phase of the SHP project development in the recent years?</td>
<td>Pol and Ville (2009)</td>
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<td></td>
<td></td>
<td>From the design to implementation of the SHP units, which process is handled in the best possible manner?</td>
<td>Social Innovation Europe Report (2012)</td>
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<td></td>
<td></td>
<td>What positive efforts have your organisation made towards the implementation or maintenance of small hydro power plants?</td>
<td>Westley (2008)</td>
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<tr>
<td><strong>Challenges</strong></td>
<td></td>
<td>What are the biggest obstacles that are faced during the implementation of SHP projects?</td>
<td>Dempsey et al. (2009)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are the existing SHP projects well managed? If yes, what processes do you think go well?</td>
<td>Fisk (2010)</td>
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<td></td>
<td></td>
<td>Are there any unmet needs in the SHP sector in India? If yes, please specify what kinds of services are needed.</td>
<td>Haywood et al. (2010)</td>
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<td></td>
<td></td>
<td>If your friend wants to start SHP business in India, what warnings/suggestions would you give him/her?</td>
<td>Hopwood et al. (2005)</td>
</tr>
<tr>
<td><strong>Social sustainability</strong></td>
<td>Definition</td>
<td>How do you define social sustainability?</td>
<td>Kates et al. (2005)</td>
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<td></td>
<td>Human Well-being (Tackles issues like safety, health and wellness, training)</td>
<td>What actions are being taken to ensure the safety of workers?</td>
<td>Kleef and Roome (2007)</td>
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<td></td>
<td></td>
<td>Do the construction workers use safety equipment?</td>
<td>Larsen (2009)</td>
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<tr>
<td></td>
<td></td>
<td>Are the workers who are working on the SHP sites well-trained?</td>
<td>Magis and Shinn (2009)</td>
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<td></td>
<td></td>
<td>Do the IPPs offer trainings to the workers?</td>
<td>McKenzie (2004)</td>
</tr>
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<td></td>
<td>Equal participation</td>
<td>Do the local communities cooperate with the IPPs?</td>
<td>Thomensen and King (2009)</td>
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<td></td>
<td>Stakeholder relations</td>
<td>How do the local people contribute towards the implementation/maintenance of these SHP projects?</td>
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<td></td>
<td></td>
<td>Do you think that the projects owners share good relationships with the communities they operate in?</td>
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<td></td>
<td>Democracy</td>
<td>What is the role of the local self-governments in the development of SHP projects?</td>
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<tr>
<td></td>
<td></td>
<td>Are the village level governments well informed about the projects well in advance?</td>
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6 Results

6.1 Challenges existing in the SHP sector in India

It was found out that numerous challenges obstruct the development of the SHP sector in India. For private developers, these challenges hinder the progress of their projects. First of all, getting statutory government clearances is a big issue. All the interviewees considered getting the statutory clearances as the biggest obstacles for the implementation of the SHP projects. However, not all the clearances are difficult to obtain. The respondents specifically referred to forest clearance, land acquisition and environmental clearance as challenging to acquire. Sometimes, the land needed for the project is owned by the local people. Most of the time, the local people make unrealistic demands and ask for huge and undue compensation (Singal, 2009). Generally, getting all the clearances take at least two and a half to three years’ time if everything happens according to the plan.

Second, in several states of India, resistance movements against the development of SHP plants have been the biggest concerns for the authorities and the IPPs. According to the governmental authorities, consultants and the IPPs, the environmental and rehabilitation issues that are involved in the big hydro projects are incomparable to the SHP projects. However, the villagers consider all the projects as the same and resist against their development. Most of the interviewees pointed out that the local NGOs also play an active role in dissuading people against the SHP projects. One interviewee mentioned, “NGOs have hidden motives and they exploit the local people”.

Third, very often in these rural areas, getting skilled manpower is a big challenge for the developers of SHP plants. Lack of proper skills and education among the rural population has become a major concern and the need for skilled labour is eminent.

Fourth, the construction difficulties in the remote project sites pose great challenges to the IPPs. Due to the poor infrastructure, the project cost escalates. Very often, IPPs have to build the roads, bridges and transmission lines themselves. Consequently, the project costs increase and the gestation periods prolong (Ghosh et al., 2012). It is very difficult to transport heavy equipment to the project sites due to inadequate infrastructure. The SHP plant sites are located in inaccessible areas that have no adequate grid connection facilities. Power evacuation remains a big problem in the remote areas. Natural calamities like landslides, floods, earthquakes or other unforeseen geological surprises result in construction difficulties.

Fifth, there are tough and ambiguous government policies in several states of India with regards to SHP and there is a mismatch between the policies created and the actual ground realities. As a result, there is a lack of interest shown by the developers to develop these projects.

Sixth, there are management problems in the government owned SHP plants related to operation and maintenance. In the private sector, the SHP plants are well managed as the developers’ money is at stake and they try their best to ensure that there is maximum generation. However, the government plants are not well managed as there is a lack of accountability. One interviewee mentioned, “Government focuses more on the maintenance of large hydro projects as they are more profitable and does not pay much attention to the SHP projects”.

Seventh, corruption is prevalent in various government departments and that has been a major concern for the society. IPPs start to bribe the officials in order to get the
clearances on time. One interviewee mentioned that “Corruption is prevalent everywhere and it is difficult to get things done without paying bribes”. Another interviewee pointed out “IPPs don’t have patience. They start bribing the officials fifteen days after submitting the documents. This is not the right approach. One needs to have patience”. Therefore, the problem lies in the culture. Even if the officials do not demand the bribes, people deliberately offer them to hasten the time consuming process of getting clearances. Eighth, the interest rates are very high in India and that pushes up the project costs. Most of the IPPs interviewed were paying interest rates ranging from 12.5–15%. There is also unwillingness shown by the banks to finance the SHP projects. Although there are some financial institutions in India like Indian Renewable Energy Development Agency (IREDA) that support the SHP projects but usually the interest of most of the banks lie in the large hydro projects instead of SHPs. Other financial institutions are not very motivated to finance SHP projects as they do not find these projects viable. Lastly, lack of reliable hydrological data required to assess the viability of the project is a big issue. Hydrology plays a big role in determining the viability of the SHP project and many times this data is faulty and unreliable which poses a big threat to the investor.

6.2 Towards achieving social sustainability

The development of SHP has resulted in social and economic upliftment of the rural communities in India. SHP is a renewable energy source that not only meets the energy needs of the remote and thinly populated areas of India which are otherwise devoid of electricity but it also ends up in solving other pressing needs of these communities. First of all, the development of SHP plant in a remote area guarantees the employment for many local people. For each project, several people are employed and they get a chance to stay and work in their own villages without having to travel to large cities for work. Secondly, due to the electrification of the village, small scale industries are set up and the overall economy of the area gets improved. The electrification provides ample opportunities for the development of small enterprises like agro processing units, cold storages, crop drying and carpenter workshops. Further, the areas where these SHP units are being set up, locals open up small businesses like tea stalls or restaurants and thereby self-employ themselves and generate livelihood. Thirdly, the infrastructure of the area where SHP units are installed gets improved tremendously. Since, the potential sites for SHP units are located in very remote and inaccessible areas, the IPPs have no choice but to build bridges and transmission lines whenever needed (Ghosh et al., 2012). Lastly, in some states of India, IPPs of these SHP units contribute towards the local area development. The state government obligates them to pay 1% of their project costs to the local area development authority which contributes significantly towards the development of that area. As a result, educational institutions, children parks, hospitals, etc. are being built in these villages that promote the development of these rural areas and allow the villagers to get access to the basic amenities.

SHP projects have a positive social impact, especially in the developing world. SHP plants in the rural areas in India serve a social purpose by empowering the people who find employment. They also electrify the villages with “clean energy” that improves the economic situation of the village. However, towards a socially sustainable SHP sector in India, a lot of effort is yet to be exercised. There is still scope for improvement and some suggestions based on the emergent principles of social sustainability are provided below:
• **Human well-being**: Providing a safe working environment for the employees is important for a socially sustainable business. Unfortunately, some people have lost lives due to improper working environment during the development of SHP plants in India. It should be noted that such accidents are not common in this industry. Nevertheless, few incidents have happened in the past due to negligence of the project owners. Such incidents also happen due to the lack of stringent laws against those who fail to follow them. According to one interviewee, some labourers working on the construction sites have died due to the lack of suitable gear. He mentioned, “The laborers die and the families are given some financial compensation. Money cannot bring back the lost lives, can it?” It is essential to provide proper working environment to the employees and take into account their health and safety. Safe workplace, good wages, healthcare, and other social aspects need to be incorporated in order to make this sector socially sustainable.

• **Equal participation**: SHP as a sector has brought forth employment, education, access to healthcare, and many other benefits to the communities where they have been set up. However, many times the same people that get benefitted later on become the cause of the difficulties that these projects face due to their lack of participation. Therefore, local communities should be able to participate in these projects so that they have a sense of ownership towards the projects that get implemented in their villages. One interviewee commented, “Outside the SHP plants, you can see sign boards displaying statements like ‘photography prohibited, not allowed inside’. The project owners do not allow the local people to be part of their projects except during construction”. Involvement of the local communities even during the planning phase is necessary to bind them together. They should identify themselves closely with the project so that they may cooperate in its implementation (Singal, 2009). When the local people will work towards the collective objectives, they would together vision, plan and realise the collective goals.

• **Democratic government**: India is the biggest democracy in the world and yet the social evils still prevail and destroy the fundamental principles of the democratic society. The problems pertaining to corruption and bureaucracy have had a degrading impact on the democratic nation of India. The governance has to be oriented towards the people, the democratic values should be upheld and the democratic practices should be deepened. For the proper functioning and development of the SHP sector, it is very important for the state governments to give a due credit to the local self-governments at the village level and ensure their participation in the decision making. The state governments have to be open and accountable, and further ensure that they keep these local political organisations well informed about their decision making.

• **Stakeholder relations**: All the stakeholders: IPPs, consultants, government organisations, local self-governments, construction workers, other employees, suppliers etc. have to work together as a team to promote the SHP sector in India. Everyone has to make an effort to build and nurture relationships with each other. Therefore, the responsibility not only rests in the hands of the government or the IPPs but also in the hands of the communities that benefit from these projects.
By cooperating with other stakeholders, they could help their future generations to live in a better world.

SHP is a renewable and non-polluting energy source. It has many socio-economic benefits as mentioned earlier. However, it is possible to employ more sustainable strategies to build genuinely socially sustainable SHP sector. The social pillar of sustainability is being realised to a certain extent but in order to be truly sustainable, a lot of hard work has yet to be done. Figure 1 shows the current scenario of the SHP sector in India and its way forward towards being socially sustainable.

Figure 1  Towards a socially sustainable SHP sector in India (see online version for colours)

6.3 Towards generating social innovations

The challenges in the SHP development could be considered as the opportunities for social innovations. “Social innovation is a novel solution to a social problem that is more effective, efficient, sustainable or socially just, than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals” (Phillips et al., 2008). According to Phillips et al., social innovations are solutions to the social problems that are better than existing solutions. The solutions to the problems would come later. First step to create social innovations is to recognise the problems and treat them as opportunities rather than mere problems. Once the problems are recognised, the next step is to find novel solutions for them (2008). Some solutions to these challenges in SHP development are suggested below. These may not be the perfect solutions but they represent an attempt made by the researcher towards generating social innovations.

- Offering projects with clearances: In order to boost the private sector participation in SHP, the government should provide SHP projects to the IPPs only after getting all the clearances from different departments (Sharma, 2006). One interviewee suggested, “Government should have a welcome policy. It should take all the clearances and only then it should sell the project to IPP. The IPP should only have to submit the fees to different departments and start the work at the site”. This way, the government would get increased participation from the private investors, the economy would improve and consequently the nation at large would prosper. The IPP can immediately start the construction work and save a lot of time required for getting the clearances, thereby completing the project on time. Many
northern and north eastern states of India have huge potential for SHP but they are inactive due to a variety of reasons that include government policies, terrorism, difficult terrains and evacuation problems. Such states have very minimal participation from private investors. This could be a good policy for such states.

- **Training for decision makers:** Most often the IPPs find the government policies either too difficult or unclear. According to one interviewee, most people involved in defining these policies have no any idea about the SHP business as such; they hardly know the differences between the large hydro and the small hydro. Therefore, it is important to train these decision makers and the people involved in creating these policies. They need to have a thorough knowledge of the industry and how things work at the ground level. They should not make tough policies that impede the development of the SHP industry. As per the data from January 2012, the total installed capacity of SHP in India is 3300 MW while the total potential capacity is 15,384 MW. Government plans to increase the total installed capacity to 8500 MW by 2021 (MNRE, 2012). Therefore, the government should take adequate measures to ensure that these goals are met. In this regard, trainings should be made mandatory for the people who are involved in creating these policies. Further, these policies should be revised in order to attract private investments in this sector.

- **Human resource training:** Generally, the local people who take care of the operation and maintenance of the SHP units are not skilled. In order to ensure that these units are well managed, the government as well as the private sectors should impart trainings to the staff. It was found out that the local people do not have enough knowledge about the turbines and other equipment in the powerhouse. They do not detect the small problems on time. If these problems were detected early enough, huge expenditures could be minimised. Therefore, it is advised to organise trainings for the staff in order to avoid big problems.

- **Tackling construction problems:** Construction problems will prevail unless the problem of infrastructure is not solved. The absence of roads, bridges and transmission lines in the remote areas is a huge barrier to the development of the SHP units. As per the government’s scheme for “Rural Electricity Infrastructure and household electrification” launched in 2005, transmission lines are being set up all around India. There is still a lot to be done in order to achieve the goal of having electricity for all. Nevertheless, efforts on that front are being made by the government of India. SHP project implementation is an effective way to improve the infrastructure as well. In some cases, IPPs build roads and bridges at the project sites when needed. Other suggestions would include providing arrangements for uninterrupted power supply at the project sites to ensure the completion of projects on time and employing efficient methods for construction to reduce the gestation period.

- **Foreign funding agencies:** One of the solutions towards solving the problem of high interest rates is to find foreign funding agencies to provide financial support for the development of SHP projects. Most of the IPPs that were interviewed complained about high interest rates and the subsequent adverse effects on the profitability of their businesses. In Europe, for instance, the interest rates are low. Currently IPPs in India are paying 12% to 15% interest on their projects. If the IPPs can find the foreign funding agencies that offer lower interest rates, their projects will be a lot
more profitable. One interviewee commented, “The interest rate of my project has been revised from 15–12.5%. I am now looking at some foreign funding options to further lower it down as the profitability of the project is proportional to the rate of interest”.

7 Conclusion

This paper investigates the SHP sector in India and aims at finding out whether it is instrumental in realising social sustainability and if there are any possibilities for the generation of social innovations. The study focuses on this industry in order to understand the role the green energy businesses towards social sustainability and social innovation. The situation of SHP industry in India is described which focuses on the challenges in this industry. These barriers are then studied as the opportunities for social innovations. Further, this study also highlights the improvements needed in order to make this sector more socially sustainable.

According to the results, on one hand, the development of SHP has resulted in socio-economic prosperity of the remote areas of India. The villages not only get electrified but these plants also generate employment, promote small-scale industries and improve the infrastructure. Reduced migration of local people from the area, establishment of schools, parks, hospitals, temples etc. are other benefits that these projects bring in. On the other hand, challenges like getting statutory clearances, resistance from local community, construction difficulties, unskilled labour, ambiguous government policies, high interest rates, management problems, etc. also exist in this industry. Therefore, towards the socially sustainable SHP sector, human well-being has to be promoted, the working conditions of the workers need to be improved, equal participation of the local community and the local governments should be encouraged, and the stakeholder relationships have to be strengthened.

Further, the possibility to generate social innovations is also taken into consideration. Social innovations solve the problems, or in other words, provide novel solutions to the social problems so that the quality of life of individuals and communities would improve (Phillips et al., 2008). Therefore, keeping this definition in view, the researcher has provided some insights that could contribute towards solving the problems in the long run thereby acting as social innovations. Many suggestions are made for the successful implementation of the SHP projects. First of all, the government should give these projects to the IPPs only after getting all the clearances from different departments. Second, the training should be provided to those who create the SHP policies as well as to the local employees who operate and manage the SHP plants. Third, the problem of infrastructure has to be solved by building roads, bridges and transmission lines. Lastly, the IPPs could search for foreign funding in order to cut down the interest rates and get better returns on their investments.

This research mainly focused on the opinions of the IPPs, manufacturers, designers, consultants and representatives of various government organisations that support the development of SHP sector in India. It would be interesting to study this issue from the perspectives of the local communities. A future study may be suggested that could be directed towards the local village authorities of different states of India where the SHP units are being set up.
References


Publication III

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How the Social Enterprises Support Social Sustainability

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How the Social Enterprises Support Social Sustainability

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ABSTRACT

The purpose of this paper is to investigate whether or not the social enterprises in Finland are in reality socially sustainable. This paper mainly draws on the empirical data gathered from surveys sent to the social enterprises all across Finland. In addition, a part of the data was also collected from four workshops that focused on social enterprises in Finland. The authors’ analysis showed that employee participation was highly valued and the employees were given equal opportunities. However, the organisations needed some improvements in terms of their workplace practices. Most of the social enterprises collaborated with businesses, non-governmental organisations and public sector organisations but had little collaboration with universities and research organisations. The role of the social enterprises is still unstable and developing. Their most important role is the employment generation which has had a tremendous positive social impact.

Keywords: Employee, Finland, Social Enterprise, Social Sustainability, Workplace Practices

INTRODUCTION

A social enterprise is viewed as a new and distinct entity compared to classical business and traditional non-profit activity, combining different elements of the social purpose, the market orientation and the financial performance standards of business (Young, 2008). It is also viewed as an organisation that can be structured as a traditional non-profit, a for-profit organisation, a cooperative or a charity organisation; however, it is focused on addressing social issues (Borzaga & Defourny, 2001). A social enterprise has been equated with an innovative approach to tackling social needs and promoting social inclusion while providing a source of revenue for socially oriented activities (Defourny & Nyssens, 2006; Kerlin, 2006).

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Social enterprise has been conceptualized in different ways across nations (Kerlin, 2006). In Finland, the concept of social enterprise has gained popularity in recent years. While social enterprise is considered to be a relatively new phenomenon, it has lately attracted considerable political interest. The Ministry of Employment and the Economy brought this concept to the forefront (Peiponen, 2013). Due to its social aims, this concept is generating great interest among all levels of Finnish society.

Most of the governments around the world are aiming towards achieving ambitious sustainable goals for the current and future generations. They engage in interdisciplinary work in order to deal with the pressing problems of the world (Turvey, 2015). In the sustainability debate, ecological concerns have often taken precedence over the societal concerns (Ratamäki, 2013). There is an urgent need to focus on the social problems plaguing our society and develop ways to tackle such complex problems. The aim is to create a socially sustainable society which is equitable, diverse, connected and provides a good quality of life (McKenzie, 2004). The development of the social enterprise is viewed as a small step towards the realization of social sustainability. So far, a lot has been written about the concepts of social enterprise and social sustainability. However, the link between the two concepts has been discussed far less often. This paper attempts to investigate whether or not the social enterprises in Finland are in reality socially sustainable. This research thus answers the following question: Do the social enterprises in Finland support social sustainability?

The central contribution of this study is that it shows the link between the two essential concepts of social sustainability and social enterprises and also recognizes the possibility of realizing social sustainability through the development of social enterprises.

THEORETICAL BACKGROUND

About Social Enterprises

Social enterprise can be seen as an outcome of social entrepreneurship (Mair & Martí, 2006). Social enterprises combine business logic and social goals, and this characteristic distinguishes social enterprises from traditional for-profit or non-profit activity (Borzaga & Defourny, 2001; Huybrechts & Nicholls, 2013). Social enterprises usually tackle the most intractable problems of our society, including environmental problems, social exclusion, injustice and poverty. Social enterprises have solved those problems that other bodies, such as traditional private, public, voluntary or community mechanisms, have not been able to solve despite their efforts (Shaw & Carter, 2007). The definition of social enterprises varies in the literature; furthermore, social enterprises have different legal/political standings in different countries, and this greatly affects how they are set up and funded, including by and for whom. This obviously impacts how they may be evaluated or compared to one another, which thus makes them challenging targets for research.

Social enterprises are rather small-sized, act at a local level and depend on public funds. Their development is influenced by external barriers and driving forces, such as legal and taxation frameworks, public policies and budgets, demographic developments and unemployment rates. Thus, the promotion and development of social enterprises concern several policy sectors, such as social, employment and industrial policy (Heckl et al., 2007).
Social Enterprises in Finland

Social enterprises in Finland can be divided into the following two categories: (i) work integration social enterprises (WISE) which offer employment to the disabled and the long-term unemployed, and which are provided for by law, and (ii) organisations which have adopted a social enterprise business model and are therefore eligible for the social enterprise mark. Social enterprises, therefore, can tackle the social goal directly or indirectly. Direct value is created, for example, through employing those who are in a disadvantaged situation. Indirect social value is created when, for example, profits from the economic activity are utilized for the social goal.

The social enterprise mark is granted by the Association of Finnish Work. The criteria are as follows (adopted from the Association of Finnish Work):

1. The aim of a social enterprise is to promote social well-being. A social enterprise acts responsibly.
2. Limited distribution of profits: A social enterprise uses most of its profits for the benefit of the society either by developing its own operations or by giving a share of its profits to charity according to its business idea.
3. Transparency and openness of business operations: In order to assure transparency, the company applying for the mark must write down its social goals and limited distribution of profits in the company’s articles of association or rules.

In addition to the abovementioned key characteristics, one or more of the following features are related to social entrepreneurship: promoting the well-being of employees and developing ways for the personnel to get their voice heard; a customer-oriented approach in developing the business and close relations with local communities; minimizing health and environmental hazards caused by the business; developing the local economy; paying special attention to those belonging to vulnerable groups and demonstrating the company’s social effects.

Currently, there are 43 enterprises in Finland that have been granted the label and approximately 160 companies are registered as WISE. A report published by Finland’s Ministry of Employment and the Economy estimates that 4% of SMEs in Finland (which means roughly 8000 companies) could fulfil the social enterprise criteria used in the UK (TEM, 2011).

About Social Sustainability

It is commonly understood that sustainability science is interdisciplinary (Blanke, 2014). In the sustainability discourse, the social dimension has received less attention compared to the environmental or economic dimension (Cuthill, 2009; Omann & Spagenberg, 2002; Vavik & Keitsch, 2010). Integrated policies with equal emphasis on social sustainability need to be developed as they are still lacking. There are multiple reasons for this lack of attention. The concept of sustainability emerged in response to the concern about environmental degradation rather than social issues (Colantonio, 2008). More importantly, the meaning of social dimension has remained unclear and thus uncertainty exists about how it relates to the other dimensions and to wider policy issues (Littig & Grießler, 2005; Davidson, 2009; Dillard et al., 2009; Casula Vifell & Soneryd, 2012; Dempsey et al., 2011). As a result, the social pillar is the least studied of the three dimensions (Mak & Peacock, 2011). The literature completely devoted to social sustainability is limited while the broader literature finds its roots in concepts like social capital, social cohesion, social inclusion and social exclusion (Dempsey et al., 2009). There is a general agreement about the importance of social sustainability, but there have been few investigations of
what it means in practice (Mak & Peacock, 2011). Social sustainability is also seen as a dynamic concept as opposed to an absolute or constant one (Dempsey et al., 2009). This dynamism is also viewed as a weakness, however, as it has led to vagueness, which has given rise to many different typologies and frameworks (Boström, 2012). The concept of social sustainability has also been referred to as a concept in chaos due to a diverse range of work done under the rubric of social sustainability (Vallance et al., 2011). As a result, there seems to be no consensus about the criteria and perspectives that should be adopted while defining social sustainability (Colantonio, 2008).

Vallance et al. (2011) refer to Sach (1999) who recognized some key elements that form the foundation of social sustainability. These elements are social homogeneity, equitable incomes, access to goods and services, employment and cultural and political sustainability. Vavik and Keitsch (2010) expand on the notion of the well-being of generations taken from Brundtland’s definition of sustainable development. According to them, social sustainability also focuses on the concept that the future generations should have the same or greater access to social resources as the current generations. Chui (2003) also describes social sustainability as the maintenance and improvement of the well-being of current and future generations. Furthermore, the Western Australian Council of Social Services (2014) emphasizes the same concept. The organisation believes that social sustainability occurs when the formal and informal processes, systems, structures and relationships actively support the capacity of current and future generations to create healthy and liveable communities. It views socially sustainable communities as those that are equitable, diverse, connected, democratic and provide a good quality of life. Social sustainability is related to more basic needs of happiness, safety, freedom, dignity, social responsibility, community development and human rights (Vavik & Keitsch, 2010). Polese and Stren (2000) define social sustainability as ‘the development that is compatible with harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population’. They emphasize the importance of the physical environment, including housing, urban design and public spaces (Colantonio, 2008).

In order to discuss key elements of social sustainability, Littig and Grießler (2005) emphasize the importance of both ‘work’ in a very broad sense and ‘needs’ as per Brundtland’s definition of sustainable development (Boström, 2012; Colantonio, 2008). Magis and Shinn (2009) define four central constituents of social sustainability: human well-being, equity, democratic government and democratic civil society. Human well-being ensures the protection of basic needs; equity ensures mechanisms to guarantee equitable sharing of society’s benefits and costs; democratic government ensures that the governance is oriented to the people and the democratic society empowers people to build democratic government. According to McKenzie, social sustainability is a life-enhancing condition within communities, and a process within communities that can achieve this condition. This condition can be achieved through several factors, including equity of access to key services, diversity, political participation at the local level, transmitting awareness of social sustainability from one generation to the next and mechanisms of the community to fulfil its own needs (2004).

Larsen (2009) states that ‘Social sustainability must a) build inclusion at the level of the individuals, groups and society; b) provide for basic human dignity which includes at least basic human sustenance, freedom from tyranny, freedom of association, and basic human liberty; c) provide a means for people to influence their governance and d) create the capacity for learning at the level of individuals, groups, collectives, governments, corporations and society’. In short, social sustainability concerns how individuals, communities and societies live with each other and set out to achieve the objectives of development models which they have chosen for themselves while also taking into account the physical boundaries of their places and planet earth as a whole (Colantonio, 2008).
Relationship between Social Sustainability and Social Enterprises

In the pursuit of achieving the worthy goal of sustainable development, businesses can play a key role (DeSimone & Popoff, 2000). Numerous social challenges which are barriers to advancing sustainable development could be addressed through sustainable businesses (Fisk, 2010). Sustainable and socially responsible businesses can contribute to social sustainability by improving the social conditions of employees, their families, communities and society at large. They incorporate sustainability principles into the everyday practices of a business (Fisk, 2010; Weybrecht, 2010).

A social enterprise can make a huge impact on the society as its purpose is to achieve desired social change and generate revenue at the same time. According to Gould, ‘A social enterprise is a business dedicated to a social mission, or earning a profit for the financial furtherance of a social mission’ (Brouard & Larivet, 2011). A social enterprise can play a key role in addressing the social challenges by fostering both employee and community well-being while generating financial benefits. Therefore, social sustainability is embedded within the core of every social enterprise. However, understanding the crucial social sustainability perspective in its true sense has to be the goal of every social enterprise. Social sustainability covers the broadest aspects of business operations and the effects that they have on employees, suppliers, investors, local and global communities and customers. It is also focused on protecting the vulnerable, respecting social diversity and ensuring that every human being prioritizes social capital (Vavik & Keitsch, 2010). Social enterprises pursue social missions or purposes that operate to create community benefit with various degrees of financial self-sufficiency, innovation and social transformation (Brouard & Larivet, 2011). It is clear from the abovementioned definition that the welfare of the community is the fundamental goal of every social enterprise. In order to be socially sustainable, social enterprises need to bring improvement to the lives of employees within the organisation in addition to the customers and community at large. Within the organisation, issues like diversity, safety, good wages, healthcare, training and support for the employees have to be taken into account (Magis & Shinn, 2009). Outside the organisation, support has to be extended to the community and the customers. Some of the questions that every social enterprise should consider include the following: a) How can we increase the engagement of the stakeholders? b) How can we earn the trust of our customers? c) What can we do to improve the health of stakeholders? d) What can we do to improve community well-being? (Thomsen & King, 2009). Furthermore, every social enterprise should also aim to be a sustainable business. It should understand how to address economic, social and environmental challenges holistically in order to create a better world (Fisk, 2010). The progress in sustainable development can only mean improvement in all three of the following dimensions: economic, environmental and social (Tueth, 2010; Littig & Grießler, 2005).

Indicators of Social Sustainability

It has been argued that measuring social sustainability is the most challenging among the three pillars of sustainable development, i.e. economic, environment and social. Social sustainability is not as straightforward as, for instance, environmental sustainability or economic sustainability. There is no widely accepted scientific basis for analysis like, for example, acceptable levels of toxicity in the context of the environmental dimension, or a common unit of measure (i.e. monetary units) in the context of the economic dimension (Bebbington & Dillard, 2009). Deriving the indicators for social sustainability can be particularly challenging as there is a significant lack of conceptual clarity among different nations. For instance, issues like labour, employment and health are dominating in Germany; gender aspects and an aging society play an important
role in the Netherlands and poverty issues are crucial in the UK (Omann & Spangenberg, 2002). However, efforts have been made by the thinkers in this regard who have suggested indicators to assess the social dimensions of sustainability. According to Littig and Grießler (2005), there are three core indicators to assess social sustainability. The first indicator deals with the satisfaction of basic needs and quality of life, including individual income, poverty, income distribution, unemployment, education, housing conditions, health and subjective satisfaction with work, health, housing, income and the environment. The second indicator deals with social justice, which implies equal opportunity regarding quality of life and participation in the society. The third indicator deals with social coherence, which signifies measurement of, for instance, integration into social networks and harmony among different social groups.

Cuthill (2009) considered social capital, social infrastructure, social justice and engaged governance as the key factors of social sustainability. Therefore, assessing the social networks of a community, evaluating participation and equitable access to all the members of the community and determining the ability of a community to provide for participatory democracy are the key indicators of social sustainability. In brief, social sustainability could be assessed by measuring poverty, illiteracy and access (Vavik & Keitsch, 2010). If a community promotes inclusion by providing the basic needs and promotes access to participation in decision making and education, it could be viewed as a community that promotes social sustainability. Social sustainability indicators are also concerned with the integration of multidimensional and intergenerational issues inherent to the notion of sustainability, and they include deliberative participation processes that involve a wide array of stakeholders and local agents (Colantonio, 2007).

In their paper ‘Assessing Social Sustainability’, Omann and Spangenberg (2002) refer to the subjective and objective indicators of social sustainability that have been developed by the Institute for Social Ecology, Frankfurt. These indicators are shown in Tables 1 and 2.

In the case of businesses, the idea of social sustainability is interpreted as the ability to continue to stay in business through good relations with stakeholders (Brown et al., 2006). Social sustainability reflects the development that protects the mental and physical health of the stakeholders, leads to social development and treats all stakeholders fairly (Vavik & Keitsch, 2010). Therefore, the socially sustainable organisations take into account not only the employee relations but also the customer and community relations. Some of the indicators that would fit these three categories are workplace practices, work-life balance, support for employees in their

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**Table 1. Subjective key indicators of social sustainability**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Indicator</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Needs</td>
<td>General life satisfaction</td>
<td>High</td>
</tr>
<tr>
<td>Social Resources</td>
<td>Share of population who</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>- Frequently feel lonely</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Believe things have become too complicated</td>
<td></td>
</tr>
<tr>
<td>Equal Opportunities</td>
<td>Satisfaction with participation</td>
<td>High</td>
</tr>
<tr>
<td>Participation</td>
<td>Satisfaction with political participation</td>
<td>High</td>
</tr>
<tr>
<td>Sustaining Oneself</td>
<td>No key indicator</td>
<td>No targets</td>
</tr>
<tr>
<td>Cultural Diversity</td>
<td>Support for developing, sustaining and documenting of a broadly accessible and understandable cultural life in pluralistic diversity by culture, education and research politics.</td>
<td>High</td>
</tr>
</tbody>
</table>

Source - Omann & Spangenberg, 2002
non-work lives, safety, affordable housing, diversity, training, support for the larger community, social hiring, stakeholder engagement, community giving, customer engagement and customer trust (Thomsen & King, 2009).

DATA AND METHODS

The survey, which targeted the social enterprises in Finland, was conducted in March, 2014. It focused on the social sustainability indicators. The questions in the survey were based on the social sustainability indicators that were formulated by the researchers. The questions were designed to study the organisation’s relationship with its employees, customers and community at large and tackled the following three categories: employee relations, customer relations and community relations. The questionnaire dealt with all aspects of social sustainability. There were questions related, for example, to the employee participation, employee diversity, corporate social responsibility, customer engagement and collaboration activities. In the questionnaire, social sustainability in social enterprises was measured using Likert-scale statements as well as close-ended and open-ended questions. There were 14 questions in total, and each question had further sub-questions. Overall, the questionnaire had 40 questions, including the sub-questions.

The data was collected through the web-based questionnaires sent to the social enterprises found in the Finnish register of social enterprises, which is maintained by the Ministry of Employment and the Economy. The sample was 151, from which we received 27 responses, generating a response rate of 17.9%. Almost all the respondents held higher positions in their organisations. They were mainly managers and CEOs of the social enterprises.

*Table 2. Objective key indicators of social sustainability*

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Indicator</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Needs</td>
<td>HPI2: UNDP Human Poverty Index for Industrialized Countries</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>-% of population with life expectancy not above 60 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-% insufficient reading and writing capabilities (functional analfabetism)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-% relative poverty; i.e., income below 50% of the national mean income</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-% long term unemployed</td>
<td></td>
</tr>
<tr>
<td>Social Resources</td>
<td>Average time spent for voluntary activities (incl. community work, caring, and politics)</td>
<td>High</td>
</tr>
<tr>
<td>Equal Opportunities</td>
<td>Gini-coefficient of income distribution</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>GEM UNDP Gender empowerment measure:</td>
<td>Towards 1</td>
</tr>
<tr>
<td></td>
<td>-% women in parliament, leadership in administration and management in science and engineering jobs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Female share in total labour income</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>Weighted voter turnout and engagement in other non-institutionalized kinds of participation</td>
<td>High</td>
</tr>
<tr>
<td>Sustaining Oneself</td>
<td>Long term unemployment rate, extended unemployment rate</td>
<td>Declining</td>
</tr>
<tr>
<td>Cultural Diversity</td>
<td>Support for developing, sustaining and documenting of a broadly accessible and understandable cultural life in pluralistic diversity by culture, education and research politics.</td>
<td>High</td>
</tr>
</tbody>
</table>

Source - Omann & Spangenberg, 2002
In addition to the data gathered through the survey, the data used in this study also constitutes a research project called Social Entrepreneurship in Innovative Value Creation, which aims at supporting the social enterprises and building integrated knowledge on social enterprises and social entrepreneurship. Four workshops were held in 2014 which aimed at highlighting the needs of the social enterprises. The participants in these workshops included start-up social entrepreneurs, CEOs of social enterprises and non-profit sector representatives. Therefore, the observations of these workshops, analysis of the group work and discussions with the social entrepreneurs also constitute the research data. In the first workshop that focused on finding out and discussing the needs of the social enterprises, there were 20 participants, whereas in the latter three workshops there were 15 participants. The latter three had separate themes, including public procurement issues, impacts of social enterprises and employment issues. The workshops included orientation to the themes with the help of brief presentations as well as joint discussions and group work.

ZEF software was used to collect the survey data and to calculate the percentages and averages. The open-ended answers from the survey were analysed using the software ATLAS.ti. The coding scheme was derived from the data. The coding was done inductively by using open coding with a grounded-theory basis. The codes were extracted from the open responses and were further categorized as larger categories of meaning. The categories were formulated and included, for example, employment impacts, the value aspect and the developing role of the social enterprises.

RESULTS

Role of Social Enterprises in the Society

In general, the social enterprises themselves feel that they have a significant role in the society as employers that sustain important values. They believe that they act as ‘guiding lights’ towards novel ways of action and doing business:

They are important to society from the perspective of employment. For the individuals, they are extremely important. Even the training periods prevent social exclusion and mental problems. After gaining work experience, it’s easier to get to the normal working markets.

The social enterprises seem to have a developing and instable role in Finnish society, which was reflected in many responses. The respondents felt that too little is known about them, that the role of social enterprises is not sufficiently appreciated by other societal actors and that their work is not taken as seriously as that of the ‘ordinary’ enterprises:

Their significance will strongly increase. However, people still have rigid attitudes: the business in social enterprises is often seen as a sort of ‘pottering around’, and is not considered as hard work and business.

Some of the respondents noted that being a social enterprise does not remarkably differ from being any other enterprise: the same laws of business apply here as well. However, their developing role is also reflected in the resourcing problems and in changes in the operational environment that affect the social enterprises. The role of the social enterprises as societal actors is not yet stabilized and knowledge about them is inadequate. The status of the social enterprises should be strengthened. The respondents evaluated that the status of the social enterprises will be
stronger, for instance, as a result of new public procurement principles – where the procurement is also based on sustainability issues and societal impact, and not solely on the cheapest price. It has helped social enterprises to make more than just financial, including, for example, social reports and social balance sheets. While financial reports indicate the economic profitability of the company, making social reports and social balance sheets can also measure the social efficiency of the company. This trend is growing, and this might help the social enterprises to justify their existence.

What might hinder the development of social enterprises as societal resources is if their role and the mechanisms between decisions and their consequences for the social enterprises are not understood: ‘The biggest threat for us are those decision-makers who do not see the holistic situation and how the things are intertwined’.

Many respondents described lack of resources as a problem. They mentioned that hiring people with reduced capabilities is expensive for the company, because a lot of supportive staff is needed: ‘Two people are often needed for one job’.

Social enterprises are typically very small enterprises. The hiring support given for them was described as vital for their existence, but it was also mentioned that this does not come close to covering the costs. Several respondents mentioned the need for resources and for suitable funding instruments.

The employment impacts were seen in two levels. On the one hand, being at work and being part of a community hinders the social exclusion of the individuals, and has positive effects on their physical and mental health. The social enterprises provide a stepping stone to working life for people with reduced capabilities or those experiencing long-term unemployment. They also have positive impacts on health and self-appreciation, and in this way they prevent social exclusion. Therefore, on the other hand, these employment and inclusion impacts benefit the whole society as well.

In Table 3, the main themes related to the role of social enterprises in society, the codes and the number of quotations related to each theme are presented.

### How the Social Enterprises View Themselves

The respondents were asked about the factors which make their enterprise a social enterprise. It was found that the employment factor and the restricted profit share became the two most characteristic features for the enterprises: ‘We are not aiming at making profit but employing the unemployed’.

In addition to employing the unemployed, the social enterprises employ people with low functional capabilities in some way, including people with mental or other kinds of illnesses. Many enterprises considered themselves to be social enterprises through their societal impact; for example, aiming at solving the societal problems which, in addition to employment effects, may appear in the sector where the enterprise operates by producing services that are important for societal well-being. This includes services for special groups, people with mental illnesses, etc. There were also individuals who mentioned the transparency in action, contributing to the development of the whole sector and making special efforts to ensure employee wellbeing.

The themes found (related to the factors that the social enterprises consider themselves to be a social enterprise) are presented in Table 4.
Social Sustainability Indicators

We developed the social sustainability indicators so as to suit the different types of social enterprises. We divided the indicators into three main categories: employee relations, community relations and customer relations, which are described in the following paragraphs.

Employee Relations

We developed social sustainability indicators to evaluate the employee relations, some of which include workplace practices, work-life balance, safety, health and wellness, diversity and training. Table 5 displays the opinions of the respondents regarding these indicators. The results showed that

<table>
<thead>
<tr>
<th>Theme</th>
<th>Codes</th>
<th>Number of Quotations under Each Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee relations</td>
<td>Workplace practices, work-life balance, safety, health and wellness,</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>diversity and training</td>
<td></td>
</tr>
<tr>
<td>Community relations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer relations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3. The codes and categories and the number of quotations under each theme

<table>
<thead>
<tr>
<th>Theme</th>
<th>Number of Quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>10</td>
</tr>
<tr>
<td>Restricted profit sharing</td>
<td>9</td>
</tr>
<tr>
<td>Societal impact</td>
<td>5</td>
</tr>
<tr>
<td>Openness of action</td>
<td>1</td>
</tr>
<tr>
<td>Developing the sector</td>
<td>1</td>
</tr>
<tr>
<td>Making special effort to ensure well-being at work</td>
<td>1</td>
</tr>
</tbody>
</table>

Social Sustainability Indicators

We developed the social sustainability indicators so as to suit the different types of social enterprises. We divided the indicators into three main categories: employee relations, community relations and customer relations, which are described in the following paragraphs.

Employee Relations

We developed social sustainability indicators to evaluate the employee relations, some of which include workplace practices, work-life balance, safety, health and wellness, diversity and training. Table 5 displays the opinions of the respondents regarding these indicators. The results showed that
these organisations needed improvements in terms of their workplace practices. It was found that most of these organisations lacked systematic approaches for evaluating employee performance or for gathering development ideas from the staff members. The organisations also showed a lack of healthy work-life balance among their employees. Some employees in the small social enterprises worked for longer hours and had little time for their personal lives. Furthermore, most of these organisations paid little attention to the health and fitness of their employees.

Other factors like training or diversity were being realized in these organisations. For example, 76.2% of the employers offer various on-the-job trainings to their employees for the development of their skills. Another interesting finding is that although diversity is valued by these organisations, 39.1% of the organisations were not comfortable with employees who had different sexual orientations. However, 56.5% had no issues with having such employees at their workplaces.

The work-life balance and workplace practices within these social enterprises were also measured using another set of questions (see Table 5).

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>May be</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation/reward scheme for employees</td>
<td>35%</td>
<td>65%</td>
<td>0%</td>
</tr>
<tr>
<td>Development ideas gathered from employees, customers and other stakeholders are often put into practice</td>
<td>76.2%</td>
<td>9.5%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Fitness vouchers/cultural notes are used for employees</td>
<td>28.6%</td>
<td>71.4%</td>
<td>0%</td>
</tr>
<tr>
<td>Sexual orientation of employees is not a problem</td>
<td>56.5%</td>
<td>39.1%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Trainings are offered to the employees</td>
<td>76.2%</td>
<td>19%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Time cards are used by the employees</td>
<td>47.6%</td>
<td>52.4%</td>
<td>0%</td>
</tr>
<tr>
<td>There is a system for evaluating employee performance</td>
<td>38.1%</td>
<td>57.1%</td>
<td>4.8%</td>
</tr>
<tr>
<td>There is a systematic approach to gather ideas for improvement from the staff</td>
<td>40%</td>
<td>55%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Table 6. Mean and standard deviation using the employee relation criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Range (1-5)</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty versus atmosphere of trust</td>
<td>4.77</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>Homogeneity of employees versus diverse workforce</td>
<td>3.7</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>Difficulty for the company to retain people versus employee loyalty</td>
<td>4.5</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Round-the-clock work culture versus well-balanced work and personal life for employees</td>
<td>3.27</td>
<td>1.52</td>
<td></td>
</tr>
</tbody>
</table>

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In the questionnaire, we also measured criteria such as equal opportunities, democracy, participation and diversity within the organisations. Table 7 displays the opinions of the participants about these themes. The respondents were asked to rank their opinions using Likert-scale statements on a scale of 1 to 5 (strongly disagree to strongly agree).

It was found that 63.6% of the social enterprises involve their employees in the organisational development, which shows that employee participation is valued in these organisations. The organisations preferred hiring workforce locally rather than from abroad; 61.9% disagree that there is a need to hire people from abroad. Furthermore, attitudes towards hiring immigrants locally clearly signify that these organisations prefer hiring locally irrespective of the differences in culture.

Equity and diversity are integral to social sustainability (McKenzie, 2004). Giving equal opportunities to the employees and recruiting a diverse workforce are essential elements of socially sustainable organisations. Some of the indicators that examined the concept of diversity and equal participation were as follows: a) Our organisation recruits people who face labour market barriers because it is compulsory; b) Our organisation recruits people who face labour market barriers even when it is not compulsory and c) Our organisation does not recruit people who face labour market barriers.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>1 Strongly Disagree</th>
<th>2 Disagree</th>
<th>3 Neither Agree nor Disagree</th>
<th>4 Agree</th>
<th>5 Strongly Agree</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every employee in our organisation is somehow engaged with the organisational development</td>
<td>0%</td>
<td>18.2%</td>
<td>4.5%</td>
<td>63.6%</td>
<td>13.6%</td>
<td>3.72 (n = 22)</td>
</tr>
<tr>
<td>In order to make our company profitable, we need to hire an educated workforce from abroad</td>
<td>33.3%</td>
<td>61.9%</td>
<td>4.8%</td>
<td>0%</td>
<td>0%</td>
<td>1.57 (n = 21)</td>
</tr>
<tr>
<td>In order to make our company profitable, we cannot hire unskilled immigrants</td>
<td>29.2%</td>
<td>41.7%</td>
<td>16.7%</td>
<td>8.3%</td>
<td>4.2%</td>
<td>2.16 (n = 24)</td>
</tr>
</tbody>
</table>
As shown in Figure 1, 65.2% of the respondent companies recruit people who face labour market barriers even when it is not compulsory. It clearly shows that providing equal opportunities to everyone is important to most of these social organisations: 21.7% of the companies hire such people as it is obligated by law, while only 17.4% do not recruit people with labour market barriers.

Furthermore, the criterion of participation was examined through the following indicator: ‘In our organisation, the employees participate in the decision-making processes’. It was found that 61.1% of the respondents involve their employees in the decision-making process; 38.9% of the organisations answered otherwise.

Customer Relations

The evaluation of the social sustainability of the companies could not be complete without taking the customer relations into account. The organisations can succeed by maintaining positive relationships with their customers. Therefore, customer satisfaction may not be viewed as just a sustainability issue but also as a profitability issue by most of the organisations. It is important for a company to invest time and resources in order to understand its customers. Through the social sustainability indicators, we tried to evaluate the customer relations of the organisations, including customer engagement, trust, vulnerable customers and the accessibility of the company’s products/services.

Table 8 displays the opinions of the respondents regarding some of the indicators of customer relations. The results showed that most of the organisations viewed their products/services, policies and communication as being quite accessible to all people irrespective of their abilities or characteristics. Furthermore, 91.3% of the respondents believed that their organisations adhere to the principles of accessibility while 8.7% of the respondents were unsure about it. Most of the respondents believed that even differently abled people could be viewed as potential customers and that they should be treated equally and according to their needs. Furthermore, they expressed their belief that the company’s products or services should also be made more accessible even to vulnerable and low-income households.

With regard to the customer engagement and involvement, it was interesting to discover that although most of the respondents believed that their organisations keep the customers involved, they do not have any systematic approaches for gathering the development ideas from their customers. Fifty-five percent of the respondents believed that their organisations do not utilize any systematic approaches for gathering ideas from their customers while 40% responded in the affirmative. Those who responded positively referred to customer satisfaction surveys, feedback forms, customer feedback registers and annual feedback surveys as some of the systematic ways

Table 8. Customer relations

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Yes</th>
<th>No</th>
<th>May be</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company policies, products, services and communication adhere to the principles of accessibility</td>
<td>91.3%</td>
<td>0%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Organisation has a systematic approach for gathering development ideas from the customers</td>
<td>40%</td>
<td>55%</td>
<td>5%</td>
</tr>
<tr>
<td>The development ideas gathered from employees, customers and other stakeholders are often usable</td>
<td>76.2%</td>
<td>9.5%</td>
<td>14.3%</td>
</tr>
</tbody>
</table>
to gather the development ideas from the customers. Most of the organisations which gathered feedback from their customers believed in the efficacy of listening to their customers and acting upon their feedback in order to build customer loyalty.

It was found that 76.2% of the respondents viewed the development ideas gathered from the staff members, customers or partners as usable; 9.5% did not view them as usable and 14.3% were unsure. Most of the respondents believed that it is important to involve different stakeholders in gathering the development ideas for the organisation as productive ideas result from such interactions.

Community Relations

Community relations refer to the extent that the social enterprises interact with the community, take into account various user groups in terms of accessibility and have an impact on the society. The community relations of the enterprises were assessed, for example, through charitable activities, accessibility of the products and services, networking and collaboration, participating in other societal development and the profit division. See Table 9 for further details.

Nearly all the respondents described their products and services as accessible and barrier free. Sixty percent said that they participate in the broader development in the society regarding, for example, environmental or social issues. However, only one third of the respondents said that they have some indicators for assessing the societal impact of the enterprise.

Sixty-eight percent of the enterprises have been collaborating with the public sector organisations, 68% have been collaborating with other enterprises and 63% have been collaborating with NGOs. Only 26% of the social enterprises have been collaborating with universities and research organisations. About a half of the enterprises collect development ideas from the other organisations, which reflects implementing the ideas of open innovation (Chesbrough 2003), a paradigm that assumes that organisations can and should use both external and internal ideas and combine them to create value (Chesbrough 2003; 2006). In addition, about a half of the enterprises have an agreement about how the profit should be divided (which was a bit surprising). Those who had an agreement used around 80% of the profit (average) for the development of the enterprise, and around 20% for societal development.

What was interesting was that 61% of the respondents mentioned that they allocate resources for charitable activities. However, in a multiple choice question, 52% of the enterprises chose the following option: ‘We don’t have to allocate resources to charitable activities, because we benefit the society in other ways’. Only one of the respondents mentioned that they allocate a lot to charitable activities.

Table 9. Percentages of respondents for the indicators for community relations

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Yes</th>
<th>No</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocating resources for charitable activities</td>
<td>60.9%</td>
<td>21.7%</td>
<td>17.4%</td>
</tr>
<tr>
<td>Accessibility of the products and services of the enterprise</td>
<td>91.3%</td>
<td>0%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Participation in the broader development of society</td>
<td>60%</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Having some indicators for assessing the societal impact of the enterprise</td>
<td>33.3%</td>
<td>61.9%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Systematically collecting development ideas from the collaborators</td>
<td>52.4%</td>
<td>47.6%</td>
<td>0%</td>
</tr>
<tr>
<td>An agreement regarding profit division</td>
<td>52.4%</td>
<td>42.9%</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

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We also asked in which ways the enterprise aims at promoting the well-being of the society, and 81% responded that this is done through the employment effects. Sixty-seven percent mentioned that societal well-being is promoted through the sector where the enterprise operates. Participation in the societal development projects was mentioned by 62% of the respondents, while ‘collaboration network’ was mentioned by 52%.

To summarize, the social enterprises collaborate with other societal actors, especially with other enterprises and public sector organisations; roughly half of these enterprises also systematically search for development ideas from outside their organizations. Although the social enterprises feel that they have an impact on society in various ways, the employment effects are considered to be the most important. However, the enterprises quite rarely have indicators for assessing their impact on the society.

CONCLUSION AND DISCUSSION

This study sets out to investigate whether or not the social enterprises in Finland are in reality socially sustainable. We formulated social sustainability indicators to assess the social dimensions of sustainability in these organisations. We divided the indicators into the following three main categories: employee relations, community relations and customer relations. Within each category, we devised criteria that could assess the social sustainability dimension of these enterprises. The purpose was to find out the relationships that the social enterprises have with their employees, customers and community. Our analysis showed that within the category of employee relations, criteria such as training, diversity and safety issues were given importance. Employee participation was highly valued and equal opportunities were provided to the employees. However, these organisations needed some improvements in terms of their workplace practices. For instance, most of the social enterprises lacked systematic approaches for evaluating employee performance. Furthermore, these organisations also showed a lack of healthy work-life balance among their employees and paid little attention to their health and fitness. In the empirical analysis, it became evident that these organisations maintained healthy community relationships. It was found that nearly all the respondents described their products and services as accessible and participated in the development of the community. Most of the social enterprises collaborated with businesses, NGOs and public sector organisations. However, they had little collaboration with universities and research organisations. We found some conflicting explanations regarding the questions about charitable activities. More than half of the enterprises mentioned that they allocated resources for charitable activities. However, in another question, the same respondents mentioned that they did not need to allocate resources to charitable activities as they benefitted the society in other ways. This may be the result of different types of social enterprises among the respondents. Although the respondents believed that the social enterprises have an impact on society in various ways, the employment effects are considered to be the most important.

Within the category of customer relations, we found that most of the organisations engage their customers. However, it was interesting to note that most of these organisations did not have any systematic approaches for gathering the development ideas from their customers. In short, the results suggest that these social enterprises fulfil the basic criteria of socially sustainable organisations; however, improvements are needed in certain areas as mentioned above.

Social enterprises empower the long-term unemployed and the margins of the society by employing them and providing them with a stepping stone to working life. They believe that they have a significant role in the society in terms of addressing various societal problems and promoting social inclusion. Social inclusion is one of the seven challenges of the EU Sustainable
Development Strategy, the objective of which is to create a socially inclusive society. One of the key indicators to evaluate social inclusion is providing access to the labour market (European Commission, 2013). The respondents view themselves as much-needed organisations for the society; however, they feel that their role is not sufficiently appreciated by other societal actors and that knowledge about their organisations is inadequate. They believe that the status of social enterprises should be strengthened. The respondents mentioned lack of resources and inadequate funding as their biggest challenges. Therefore, we suggest that the government should provide additional funding to regional development agencies to improve the support for social enterprises. Furthermore, it should raise awareness about social enterprises and promote their uptake.

This paper shows a way to assess and improve the sustainability aspects of social enterprises. We argue that social enterprises should tackle healthy relationships with employees, the community and customers, and we refer to concrete indicators to measure those important aspects. The results of this study could be beneficial for the social enterprises to gauge their social sustainability traits and improve their functionality.

This study has some limitations; for example, the response rate was rather small. The social enterprises in Finland have garnered a lot of attention and numerous surveys have targeted them recently. Therefore, the motivation of the respondents to respond to our survey was fairly low. Furthermore, since Finnish social enterprises have been targeted in this study, the results cannot be generalized to the social enterprises from other countries. In addition, there has been a lack of prior research studies that focused on social sustainability in social enterprises. Therefore, there was no existing theoretical foundation for understanding our specific research problem.

A future study may be suggested where the Finnish work integration social enterprises and similar enterprises from other countries could be studied together. An international comparison of these similar organisations could be useful for the Finnish social enterprises in gaining a better perspective and improving their processes.

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Publication IV

Khan, R.
Small Hydro Power in India: Is It a Sustainable Business?

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Small Hydro Power in India: Is it a sustainable business?

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Highlights
- SHP industry in India depicts both strengths and weaknesses.
- Numerous obstacles impact the profitability of the SHP projects.
- Alternate funding options and formalized clearance procedures need to be addressed.
- Environmental awareness and technology research investments should be developed.
- Relationships with all stakeholders need to be strengthened.

Abstract
Small Hydro Power (SHP) is one of the most important renewable energy generation sources. It is a cost-effective technology that is being used for rural electrification in the developing countries including India. The Indian government is providing attractive initiatives to the private investors to promote faster development of SHP. Until now, a lot has been written about assessment, potential, advantages and the technical aspects of the SHP plants. However, the important business sustainability perspective has not been yet subjected to empirical analysis. Sustainable development involves three interconnected dimensions: social, economic and environmental sustainability. This paper attempts to investigate whether SHP business in India is a sustainable business. The study is based on the analysis of qualitative data acquired through 28 in-depth interviews with various actors that are connected to the SHP industry in India which include Independent Power Producers (IPPs), manufacturers, designers, consultants and representatives of various government organizations. The empirical material was collected in four states of India namely New Delhi, Himachal Pradesh, Uttarakhand and Jammu and Kashmir (J&K) in February, 2013. The data was acquired by individual in-depth interviews, group discussions and direct observation of one SHP plant. The results show that all the three dimensions of sustainability are being realized to a certain extent. However, utmost efforts have to be undertaken in order to call this sector completely sustainable. Both benefits and challenges in all these dimensions are highlighted and recommendations towards a sustainable SHP sector are provided. Further, this study also proposes suggestions for the interested investors.

1. Introduction
The Brundtland Commission’s definition of sustainable development as the “development that meets the needs of present generations without compromising the ability of future generations to meet their needs” points towards a concern for the natural systems as well as the social welfare [1]. Sustainable development reflects three interrelated dimensions: social equity, economic prosperity and environmental quality [2]. This definition signifies that these three dimensions should be realized as dependent to and in harmony with each other. In order to achieve sustainable development, the role of business sector is very important. Development of the sustainable business or green business is vital for achieving long term sustainability. Green business encompasses the social and economic dimensions alongside environmental protection in order to maintain the sustainability of the business [3]. Green business understands how to address economic, social and environmental challenges holistically in order to create a better world [4]. In this context, the green energy businesses have received a lot of attention as they generate clean renewable energy by taking into account the environmental concerns and minimizing the release of greenhouse gases during the generation process unlike the non-renewable energy sources. These green energy businesses are instrumental in meeting the energy needs of people without
depleting the resources of the planet. One such green energy generation source is the hydropower—a renewable energy source where power is derived from the energy of water moving from higher to lower elevations [5]. The focus of this study is to investigate the Small Hydro Power (SHP) sector in India where it refers to hydropower projects with capacity generation of less than 25 MW. SHP is considered to be one of the most cost-effective energy technologies to be considered for rural electrification in less developed countries [6]. Its importance has been favoured at the sustainable development forums worldwide. SHP is seen as an innovation as compared to the big hydro projects that involve rehabilitation and resettlement problems as well as prolonged installation periods. SHP units are attractive renewable energy generation sources that are economically viable and require a short time for implementation [7].

The Indian government is promoting SHP and offering incentives to private investors for establishing such businesses in order to promote economic growth. Much has been written about the assessment, potential, advantages and the technical aspects of SHP plants in India. However, the important aspect of business sustainability perspective has not been yet subjected to empirical analysis. Therefore, this paper aims at finding out whether SHP in India is a sustainable business. This is done by investigating the SHP business sector by taking into account complex network of stakeholders who share different interests. This research attempts to answer the questions: Is the SHP business in India a sustainable business? Does it realize all the three dimensions of sustainability? It also proposes suggestions for investors.

The main contribution of this research is to show the sustainability perspective of SHP business industry in India. It is also important as it provides suggestions to the investors who plan to invest in the SHP sector within India.

2. Hydropower as a sustainable energy source

Many studies have been conducted so far regarding the potential of hydropower to improve economic viability, preserve ecosystems and enhance social justice. Hydropower projects that are developed and operated in an environmentally and socially responsible manner represent sustainable development at its best. Such projects can make significant contributions to achieving sustainable development (8). Hydropower potential has been identified in developing countries as well as countries like Canada, Turkey and Russia. In Western Europe and the US, the additional hydropower potential is limited, not just because of advanced development but also due to environmental and political reasons (9). Further, the economic and environmental and technical benefits of hydropower makes it an important contributor to the future world energy mix, particularly in the developing countries (10). SHP projects are sustainable sources of energy as they not only require inexpensive equipment and construction work but the cost of energy generation is also inflation free and these schemes promise quick financial returns. Other benefits include irrigation, water supply, flood prevention, fisheries and tourism which make these projects self-sustainable (11). SHP can significantly contribute to the well-being and economic health of communities (12). In spite of these benefits, many barriers remain against SHP development throughout the emerging markets. The governments of these countries have to frame suitable policies in order to promote rapid expansion of the SHP projects (13).

3. SHP development in India

India faces tremendous challenges in meeting its energy needs. India’s national average per capita electricity consumption is very low at 778.63 kWh (14). The government needs to increase its power generation capacity and utilize every available source of power generation. In this context, the development of hydropower is considered to be of high significance. Hydropower is an energy source where power is derived from the energy of water moving from higher to lower elevations. The installed capacity of hydropower by the end of 2012 contributed 15,384 MW (15) which is different in every country. There is no worldwide consensus on the classification of hydropower projects on the basis of installed capacity due to varying development priorities (6). To date there is still no internationally agreed definition of ‘small’ hydro; the upper limit varies between 2.5 and 25 MW (6). In India, SHP refers to hydropower projects with capacity generation of less than 25 MW. SHP plants can also be classified according to their function and based on source of water, as run-of-river, canal-based and dam toe schemes (15). The renewed interest in renewable energy sources makes the SHP development a subject of interest worldwide (16). Among other renewable energy generation sources, SHP has a potential to play a critical role in improving the overall energy scenario of India, especially for the remote and inaccessible areas (14). SHP is one of the most cost-effective energy technologies to be considered for rural electrification in less developed countries (6).

India has a tremendous hydropower potential that has not been completely harnessed. In India, an estimated potential of 15,384 MW for SHP plants has been established and a capacity of 3300 MW has been installed so far (6). The government has planned to increase the SHP installed capacity to 8500 MW by the end of 2021 (14).

The Indian government has instructed the states to set preferential tariffs for SHP (17) and offer financial incentives including capital subsidies (14). Currently, the SHP projects are essentially private investment driven and this sector is handled by the Ministry of New and Renewable Energy (14). The government is trying to attract investors by providing good incentives for SHP development a subject of interest worldwide (16). Among other renewable energy generation sources, SHP has a potential to play a critical role in improving the overall energy scenario of India, especially for the remote and inaccessible areas (14). SHP is one of the most cost-effective energy technologies to be considered for rural electrification in less developed countries (6).

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Business is green if it incorporates principles of sustainability into each of its business decisions, provides eco-friendly products or services, is greener than the traditional competition and has made a long-term commitment to environmental principles in its business operations [21].

"An authentic sustainable business contains six essential characteristics. (1) Triple top-line (TTL) value proposition which includes profits for the company, natural world betterment and social advantages for the community (2) Nature based knowledge and technology to be used in the business. (3) Gradual reduction of products of service and their replacement with products of consumption. (4) Utilizing green energy technologies like solar, wind, geothermal and ocean energy. (5) Locally operated businesses and organizational sustainability is a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity" [28]. Others define the concept as "the maintenance of natural capital" [29] or "the ability to maintain the qualities that are valued in the physical environment" [30]. The concept of environmental sustainability is apart from but at the same time related to both social and economic sustainability [28].

Nowadays, businesses have to take immediate actions regarding the challenges they face such as pollution, rising temperatures, water shortage or crop failure. There should be a shift in the way businesses are conducted. Most businesses in the past have been considered to be the major contributors to environmental degradation [19]. Some detrimental effects that they had on the environment included: the large-scale extraction of non-renewable resources (such as minerals, coal and oil) as well as pollution of the water bodies, pollution of environment by burning fossil fuels and deforestation. They have consumed the resources and applied the processes that had a negative impact on the environment. However, nowadays, several businesses are committed to employing sustainable business practices and having a positive impact on the environmental sustainability.

5. Understanding the three dimensions of sustainability

5.1. Economic sustainability

According to US President’s Council on Sustainable Development, “Economic growth can and should occur without damaging the health of our environment” [18]. The economy and environment should be viewed as single interlinked systems with a unified valuation methodology as ecological truth and economic reasoning are inherently linked together [23].

“Economic sustainability concerns the specification of a set of actions to be taken by present persons that will not diminish the prospects of future persons to enjoy levels of consumption, wealth, utility, or welfare comparable to those enjoyed by present persons” [24].

Within a business organization, economic sustainability refers to the strategies that focus on the efficient and responsible use of the resources so that the organization continues to operate and make profit. An important dimension of economic sustainability is the dynamic efficiency—an ability to improve the economy’s efficiency over time through education, research and innovation, an ability to quickly adapt to changed economic conditions and maintain the productivity. Further, in order to provide the future generations with access to the similar resources, efficient policies need to be devised and substantial changes have to be made in the way of analyzing economic development [25]. Therefore, the definition of economic sustainability includes not only intergenerational equity but also dynamic efficiency [26].

5.2. Environmental sustainability

Environmental sustainability has been a topic of concern since early 1960s. Growing awareness for environmental issues has led the governments and industries to establish instruments for nature protection [27] and at the same time make responsible decisions to lower the negative impact of human activity on the environment. Environmental sustainability is a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet these needs nor by our actions diminishing biological diversity” [28]. Others define the concept as “the maintenance of natural capital” [29] or “the ability to maintain the qualities that are valued in the physical environment” [30]. The concept of environmental sustainability is apart from but at the same time related to both social and economic sustainability [28].

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5.3. Social sustainability

Another important aspect of sustainability called the social sustainability is the development that promotes social cohesion. According to Western Australia Council of Social Services, “Social sustainability occurs when the formal and informal processes; systems; structures; and relationships actively support the capacity of current and future generations to create healthy and livable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life” [31].

It focuses on the concept that the future generations should have the same or greater access to social resources as the current generations and at the same time allow for equal access to social resources within the current generation [27].

“Social sustainability could be understood in the light of various principles that form the backbone of socially sustainable societies. These principles include good quality of life, equitable opportunities for all its members, encouragement of diversity, social cohesion or promotion of connectedness within and outside the community, democracy and governance and maturity whereby an individual accepts the responsibility of consistent growth [31]. “Human well-being, equity, democratic government, and democratic civil society are central constituents of social sustainability” [32].

In case of businesses, the idea of social sustainability is interpreted as the ability to continue to stay in business through good relations with its stakeholders [33]. Social sustainability reflects the development that protects the mental and physical health of the stakeholders, leads to the social development and treats all stakeholders fairly [27].

6. Research methods and context

This study focuses on examining the sustainable nature of SHP business sector in India. The data consists of semi-structured interviews with the key stakeholders that are associated with the SHP industry in India. These include Independent Power Producers (IPPs), manufacturers, designers, consultants and representatives of various government organizations that support the development of SHP sector in India. This empirical material was collected in four states of India namely New Delhi, Himachal Pradesh, Uttaranchal and Jammu and Kashmir (J&K) in February, 2013. The data was acquired through 28 individual in-depth interviews. Each interview lasted for about 40 min to 1 h, and the questions mainly dealt with the economic profitability of SHP
sector in India, social issues and community development, and environmental concerns. The questions varied according to the different stakeholders that were interviewed. After few interviews, more issues were brought to light and thus more questions were added to the interviews. The interviewees were chosen intentionally to get the overview of the SHP sector in India. It was important to take the perspectives of all the key players into consideration. Besides the formal interviews, the empirical material was also acquired through direct observation of the Drang power house—a SHP plant in J&K, group discussion at the Directorate of Energy in Himachal Pradesh, participation in lectures at SHP training program held in IIT—Roorkee and some interaction with the local people of Himachal Pradesh.

Himachal Pradesh, J&K and Uttarakhand were chosen as research areas as these states offer tremendous potential for SHP in India. New Delhi was selected as all the major consultants of SHP and manufacturers of SHP technologies are localized in this region.

SHP sector was preferred because SHP units bring about positive social benefits to the local communities by encouraging community participation and capitalizing on local skills for plant constructions. Further, the researcher has an interest in green energy businesses in the emerging markets especially India. The analysis of the data was done according to the principles of qualitative content analysis. The transcripts were read and the interview tapes were listened to many times until the quality data was collected. The interview transcript had twenty-five questions. Each question was focused on individually and how all the interviewees responded to each question was taken into consideration. This data was then arranged into categories. The main categories were profitability, investment patterns, management, best investment practices, environmental concerns. They were specifically chosen from diverse stakeholders that were interviewed. After few interviews, more issues were brought to light and thus few more questions were added to the interviews. The interviewees were chosen intentionally to get the overview of the SHP sector in India. It was important to take the perspectives of all the key players into account.

The approval process of the project time constitutes acquiring the statutory clearances. Nowadays, project gets completed in 5 years but earlier it was completed in 3 years as the approval process constituted 25% of the project time. On average, the completion of the SHP project varies between 5 and 7 years across different states where the majority of the project time constitutes acquiring the statutory clearances. The construction and implementation of the SHP projects in India could be considered to be quite challenging. There are numerous obstacles faced by the IPPs to set up these plants like acquiring statutory clearances from various government departments, ambiguous government policies, inadequate evacuation and transmission facilities, high upfront costs, environmental concerns, construction difficulties in remote project sites and lack of reliable hydrological data required to assess the viability of the project. However, most of the interviewees declared SHP business profitable. According to one interviewee who owns several SHP projects, “Profitability is a function of a well-designed project. Planning phase is very important. Consider hydrology risk, time for clearances and design of project in order to save time. Unlike 100% water resource. If you have planned well, it will be a profitable project.” Another interviewee commented, “If you finish your project on time and interest during construction (IDC) is under control, there is no problem. After you pay the interest, it is a gold mine. All the money is yours.”

IPP can own and operate this business for 30 and in some cases 40 years after which the project reverts back to the state government. Most of the IPPs are able to pay off their loans within 7–10 years. Therefore, after getting rid of their liabilities, they can enjoy real profit for decades. All the capital is needed during the first few years and the initial costs are high but once the project gets completed there are very low operational costs. There are no fuel costs as water is the fuel in case of hydropower. The capital costs per MW which depend largely on the location of the SHP units vary from INR 6 to 10 crores ($769,724 to €1282,873). If the SHP plant is located in the Himalayas and North East India, the project costs between INR 8 and 10 crores/MW ($1026,298 to €1282,873/MW) while as for other regions it costs between INR 6 and 8 crores/MW ($769,724 to €1026,298/MW). Table 3 shows the financial information of a typical SHP plant in one of the Indian states, Himachal Pradesh. (Conversion rate 1€ = 77.95, Source: Forex: 2.10.2014).

With regards to the opinions about the return on investments, interviewees had different opinions. For example, the repayment period of a well-designed 5 MW project can vary from 6 to 12 years. It has a lot to do with the tariff policy of the respective state. The tariff policy of the state can vary across different states of India as they have different tariff policies. For example, if the tariff is good, one can have a shorter payback period of 4–5 years but the similar project can have a longer payback period of 7 or 8 years in case of less attractive tariff. There is a lack of consistency in SHP tariff across different states. Some states have tariffs that do not ensure adequate returns on investments [7].

Interviewees seemed to have different opinions with regard to the time that is required to launch the project. This is very much impacted by the amount of time that is required to get the clearances. One interviewee commented that, “The approval process (acquiring the clearances) constitutes 50% to 60% of the project time. Nowadays, project gets completed in 5 years but earlier it was completed in 3 years as approval process constituted 25% of the project time.” On average, the completion of the SHP project varies between 5 and 7 years across different states where the majority of the project time constitutes acquiring the statutory clearances.

7.1. Economic viability

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SHP is economically viable as compared to large hydro as it takes less time and effort to construct and for this reason, its development is increasing in the remote areas where other sources are not viable or economically attractive [5]. SHP is a cost-effective solution but its economic viability is highly resource and site specific. It depends on several factors such as the available potential at selected project site, site specific conditions and size of the project [7].
The interest rates in India are very high. IPPs interviewed were paying 12.5–15% interest. Due to the high interest rates, IPPs prefer to get loans from IREDA. Getting loans from foreign funding agencies is another option that most of the IPPs were considering. One interviewee mentioned, “Profitability of any SHP project is proportional to the rate of interest. The interest rates are too high that prolong the payback period.”

Banks are also not so keen to finance the SHP projects. Assets that are created in the SHP plants like dams cannot be sold by the banks and even the land is in remote areas. Therefore, banks are not very enthusiastic to finance the SHP projects.

Current scenario is that most of the SHP developers supply power to the state utilities under the long term Power Purchase Agreement (PPA) signed with the state utilities. IPPs also sell power to the state utilities under long term Power Purchase Agreement (PPA) signed with the state utilities.

Moreover, in order to tackle the issue of high interest rates, alternative funding options could be pursued. Foreign funding agencies that offer lower interest rates could be approached for financial support for the development of SHP projects. Fig. 1 demonstrates the quotient of economic sustainability in SHP sector and its way forward:

### 7.2 Environmental sustainability

“Hydropower is a renewable, clean and non-polluting energy resource with high efficiency showing spectacular operational flexibility and economic superiority over other power generation methods” [35]. There are no radioactive wastes (produced by nuclear power plants) or fly ash emissions (particles generated by burning coal) generated by hydropower plants or any resources consumed as water is neither lost nor polluted [36]. Hydropower offers significant potential for carbon emissions reductions [5]. SHP eliminates many weak issues involved in the development of large hydro schemes. The problems associated with large hydro projects like relocation of the people, socio-economic and institutional issues or the conflict relating to the right of ethnic minorities or indigenous people do not arise with the deployment of SHP projects [34]. The SHP projects are in most cases “run-of-river” where any dam or barrage is quite small and generally little or no water is stored. The run-of-river installations do not have the same kind of adverse effect on the environment as the large hydro [6]. Therefore, these projects could be classified as renewable and green.
energy sources as the extent of their environmental impact is minimal [7]. On the contrary, most environmentalists believe that SHP has an impact on the environment as all hydro plants change different aspects of the environment. However, not all the hydro plants affect the environment in the same way. The magnitude of the impact depends on the way these plants are designed to take into account the ecosystem requirements [37]. Therefore, SHP plants have an impact on the environment but this impact is negligible compared to other non-renewable energy generation sources.

During the research, it was observed that most of the experts considered SHP plants as environmentally friendly energy generation sources as they always compared them to the large hydro projects and other non-renewable energy generation sources. Most of them considered the impacts of SHP as too small to be of any concern. A research was conducted in 2007 about the environmental impact assessment of six SHP plants in Uttarakhand, India. According to the research results, there were low to medium effects of the projects on the surrounding environments [35]. In India, some experts think that since the SHP plants have the potential of claiming Clean Development Mechanism (CDM) benefits under Kyoto Protocol, they ought to be environmentally friendly. However, others believe in the contrary. Hydropower appears to be the cleanest form of energy but experience shows that these projects have altered the river ecosystems, degraded the water quality and harmed fisheries. If these SHP plants are used extensively, they would repeat the environmentally damaging history of large hydropower plants [36].

In India, “Environment impact assessment (EIA) is used as a tool to assess the environmental impacts of SHP projects in preconstruction, construction and post construction phase. Ministry of Environment & Forest, Government of India has set the guidelines for EIA, preparation of Environmental Management plan and monitoring of mitigation measures for large number of industrial, construction and other projects including power projects. EIA process involves three steps (a) preparation of the EIA report involving scoping to documentation, (b) review and decision-making and (c) post project monitoring” [35].

7.2.1. Towards environmental sustainability

The sustainability of the SHP plants depends a lot on the way these plants are designed and it is possible to embrace sustainable ways to design and monitor these plants in order to have a minimal impact on the ecosystems. Some western experts are of the opinion that building a lot of new SHP plants will not solve any problem as the output of the energy produced is low as compared to the damage of nature [37]. However, it is an opted solution to the rural electrification of the developing world as in most cases, it is the only effective way to provide electricity to these villages and it also leads to the socio-economic development of these societies.

Concerning the sustainability of the SHP plants, a lot of work has yet to be done not only in India but also throughout the world. Currently, there are a few “environmental friendly” SHP plants in Europe [38]. In India, in order to have truly sustainable SHP plants, enormous effort has to be put in. First of all, the awareness about the environmental issues and the attitude towards environmental sustainability in India is quite different compared to the western countries. Not much importance is given to these issues both at the policy level as well as the individual level. The laws are also not so stringent compared to the western world. One interviewee declared, “The west has built its economy on hydropower and now it can afford to worry about the environment. Now it is our turn, why should we be limited by the environmental concerns.” Most of the interviewees considered low environmental impact of SHP plants as least worrying. Further, energy should be consumed efficiently. The non-renewable energy sources consumed should be reduced. For instance, during the construction phase, the generators that are used consume diesel/petrol. Therefore, in order to have environmentally friendly SHP plants, there should be a reduction in the consumption of fossil fuel energy sources. Further, conducting training programs to educate, for example, the constructors at the project sites about how to be environmentally friendly with regards to the use of water resources is important to increase the environmental awareness. There should be a proper management of waste dumping. Improper waste management can have a negative impact on the environment and the society.

![Fig. 1. Economic sustainability – current status and improvements](image-url)
Hence, it contributes significantly towards the sustainable development. Further, during the operation of the plant, the use of important chemicals like lubricants, oils and greases should be as low as possible. Replacing these chemicals by less toxic substitutes should be considered [38]. Moreover, towards an environmentally friendly SHP, investments in research have to be made for the better technologies that can tackle the potential ecological problems [36]. Lastly, the hydro system designers have to strike a balance to maintain the condition of the river and the profitability. It is possible to divert minimum water so that the aquatic life is not much impacted but that reduction in the diversion causes a negative influence on the return on investment. Therefore, there will always be a conflict concerning this issue. In order to give preference to the ecology over profitability, the concern for the environment has to prevail. Otherwise, this goal is hard to achieve. Fig. 2 summarizes the above discussion.

7.3. Social sustainability

### 7.3.1 Socio-economic benefits of SHP in India

SHP provides “clean energy” that saves the people from the health and social burdens of traditional fuels [37]. SHP has resulted in huge opportunities for social and economic upliftment of the rural communities in India. SHP is a renewable energy source that not only meets the energy needs of the remote and thinly populated areas of India that are otherwise devoid of electricity but it also ends up in solving other pressing needs of these communities.

First of all, wherever SHP unit is developed, it generates employment for many local people. Every project requires manpower for labour and management of the power plant. For each project, several people are employed and they get a chance to stay and work in their own villages without having to travel to large cities for work. Secondly, the electrification of the village provides ample opportunities for the development of small enterprises like agro processing units, cold storages, crop drying, carpenter workshops, wood carving and computer centers. This improves the economic situation of the village. Thirdly, the infrastructure of the area where SHP units are installed gets improved tremendously. Since, the potential sites for SHP units are located in very remote and inaccessible areas, the IPPs have no choice but to build bridges and transmission lines whenever needed [7]. This has resulted in the development of roads and improvement of the infrastructure of the area. Lastly, in some states of India, the power producers of these SHP units contribute towards the local area development.

The state government obligates them to pay 1% of their project cost to the local area development authority which contributes significantly towards the development of that area. As a result, educational institutions, children parks and hospitals are being built in these villages that promote the development of these rural areas and allow the villagers to get access to the basic amenities. In short, SHP projects serve a social purpose by empowering the people who find employment and electrifying the villages with “clean energy” that improves the economic situation of the village.

### 7.3.2 Social challenges in the SHP sector

In India, there are numerous social challenges that obstruct the development of the SHP sector. First of all, resistance movements against the development of SHP plants have been the biggest concern for the authorities and the IPPs in several states of India. According to the governmental authorities, consultants and the IPPs, these villagers view large hydro projects and small hydro projects as the same. The environmental and rehabilitation issues that are involved in the big projects are incomparable to the SHP projects and yet the villagers resist against the development of these projects. They give trouble to the IPPs while selling their land and ask for undue compensation [15] and seek employment even when they are unskilled. Secondly, corruption is prevalent in various government departments and that has been a major concern for the society. Transparency International reported that more than 50 percent of Indian respondents disclosed they paid bribes to use basic public services, which indicates a relatively high level of actual corruption and ranked India 95 out of 182 on its 2011 Corruption Perceptions Index [39]. In SHP sector the case is the same.

IPPs start to bribe the officials in order to get the clearances on time. One of the interviewees mentioned that, “Corruption is prevalent everywhere and it is difficult to get things done without paying bribes.” Another interviewee pointed out “IPPs don’t have patience, they start bribing the officials fifteen days after submitting the documents. This is not the right approach. One needs to have patience”. Even if the officials do not demand the bribes, people deliberately offer them to hasten the time consuming process of getting clearances. Thirdly, very often in these rural areas, getting skilled manpower is a big challenge for the developers of SHP units. Lack of proper skills and education among the rural population has become a major concern. In some states of India like Himachal Pradesh, the project owner has to employ 70% of the people from Himachal while as 30% could be from other areas. Therefore, the need for skilled labour is eminent. Fourth, there are tough and
ambiguous government policies in several states of India with regards to SHP. Lastly, there are management problems in the government owned SHP plants related to operation and maintenance due to lack of accountability.

7.3.3. Scope for improvement: towards the development of socially sustainable SHP sector

SHP projects provide a wide range of benefits to the rural population and contribute towards the socio-economic development of the remote areas of India. However, there are numerous challenges in this sector some of which have been discussed earlier. Towards a socially sustainable SHP sector, a lot of work has yet to be done. The author proposes some suggestions based on the four important dimensions of social sustainability. The first dimension is the quality of life. The laborers working during the construction of the SHP plants should be provided with safe working environment. According to one interviewee, some laborers have lost their lives due to improper working environment or lack of suitable gear. The general well-being of these workers has to be the priority of the IPPs. Further, imparting proper training to the unskilled workforce would solve the problem of unskilled labour during construction, operation and maintenance of the SHP plants. The second dimension is democracy. The problems pertaining to corruption and bureaucracy as described earlier have had a degrading impact on the democratic nation of India. Although India is the biggest democracy in the world, the social evils still prevail and impact all the sectors including SHP. In the SHP sector, it is very important for the state governments to give a due credit to the panchayats (local self-governments at the village level) and ensure their participation in the decision making concerning the development of SHP plants. The state governments have to be accountable and they should ensure that they keep these local political organizations well informed about their decision making. The third dimension is social cohesion. SHP as a sector has brought forth employment, education, better healthcare and many other benefits to the communities where they have been set up. However, many times the same people that get benefitted later on become the cause of the difficulties that these projects face. Therefore, involvement of the local communities is necessary to bind the society together. They should identify themselves closely with the project so that they may cooperate in its implementation [15]. When the local people will work towards the collective objectives, they would together vision, plan and realize the collective goals.

The fourth dimension is the stakeholder relationship. The development of SHP gives the rural communities an opportunity to be self-sustaining. It allows the current generations to have an access to the resources and pass them on to the next generation. All the stakeholders: IPPs, consultants, government organizations, local panchayats, construction workers, other employees and suppliers have to work together as a team to promote the SHP sector in India. Everyone has to make an effort to build and nurture relationships with each other. Fig. 3 gives an overview of the benefits and challenges facing SHP industry and a way forward towards social sustainability.

8. Implications for investors

There are tremendous opportunities as well as existing foreign investments in the large hydro sector. However, in the SHP sector, there are not many foreign investments. Most of the SHP plants are owned and operated by the local entrepreneurs and corporates. The western companies are not very interested in the small sized SHP investments. These projects may not guarantee high returns as compared to the large hydro projects. Most of the interviewees considered long gestation period as the most obvious reason for the lack of foreign investments in this sector. Further, the experts believe that SHP business suits the local entrepreneurs who want to stay in business for thirty to forty years. They think that western companies would like to exit after some time and that is why they do not find this business lucrative. However, in the past some western companies have shown interest in SHP sector in India. Following are some recommendations for the western companies that are interested in the Indian SHP market:

8.1. Technology transfer

There are many opportunities for the western investors regarding technology transfer. Many western companies with advanced
technologies used in small hydro have entered joint venture operations with the local manufacturers of electro-mechanical equipment. For example, Indian company like HPP Energy Pvt. Ltd. incorporated a Joint Venture in technical collaboration with Hydro Power Plant, France for design and manufacture of hydro turbines and peripheral equipment for manual/automatic operations. Further, Hovel Energy, another renowned supplier of SHP plants and manufacturer of hydraulic turbines had joint Venture operations with Austrian and German companies in the past. Some of the big players in the SHP sector from countries like Austria, Germany and France have shown their interest in the Indian SHP market and are present in India. There is still a lot of scope for the modern and robust foreign technologies in the Indian market for SHP plants. Such technologies are present in Austria, Germany, France have shown their interest in the Indian SHP market and are present in India. There is still a lot of scope for the modern and robust foreign technologies in the Indian market for SHP plants. For instance, rubber dams, completely automated powerhouses, modern generator technology, compact machine sizes, reduced power house size and compact panels were some of the missing technologies that the interviewees mentioned.

8. Financing

At present, finances for the SHP projects are arranged in India but due to the high interest rates, the project costs escalate. IPPs are already getting their projects financed by the non-resident Indians. There is a scope for the western investors to finance these SHP projects at comparatively lower interest rates. Currently, IPPs in India are paying 12-15% interest rates for their projects. If they are offered 8-9%, it will have a tremendously positive change on their business.

8.2 Manufacturing/repair facility

Most of the interviewees suggested that if the European technologies are manufactured in India, costs will significantly lower down. Sophisticated low cost designs will modernize the SHP industry in India and conduct a qualitative research. A future government organization that support the development of SHP units in case they are looking for continuous long term revenue instead of quick returns.

8.3 Consultancy

There were different opinions concerning the consultancy services by the western companies. Some interviewees believed that there was a lack of quality consultancy support in India and foreign consultants to consultancy will be beneficial for the Indians as they have better expertise about how to conceive a project. They believed that Indian consultants’ exposure is limited to India. Therefore, such services are required in India. However, they need to have a joint Venture with the Indian partners in order to know the topography, culture and other intricacies. Others believed that there are too many consultants in the market and foreign consultants cannot bring too much to the local regions in this sector.

8.5 Own and operate a cluster of SHP plants

Western companies who are looking for long term businesses can do it in collaboration with local partners and own a cluster of SHP plants. It suits those who are not looking for immediate returns and have the patience to deal with the long gestation periods of these plants. Otherwise, the above mentioned services are more suitable for them as compared to owning the plants. SHP plant can generate income for thirty to forty years and it would be suitable for those who are interested for continuous long term revenue instead of quick returns.

9. Conclusion

Sustainable development concerns three interconnected dimensions: social, economic and environmental sustainability. A business that attempts to analyze the interrelations between these systems is a sustainable business. Keeping this definition in view, the researcher attempts to investigate the sustainable nature of SHP sector in India. SHP business in India is studied by keeping in view these three dimensions of sustainable development. The aim is to find out whether the SHP sector in India is sustainable. According to the results, SHP industry in India depicts both strengths and weaknesses. First of all, most of the SHP projects are economically viable. However, the viability depends on many factors like site, conditions and size of the SHP project. Long gestation periods and high interest rates prolong the payback period. Delays in acquiring government clearances, inadequate evacuation and transmission facilities, high upfront costs, and poor grid connectivity are some of the obstacles that can impact the profitability of the project. Therefore, factors like alternate funding options and formalized clearance procedure can make this sector more economically viable. Secondly, the environmental sustainability has not been yet fully achieved and a lot of effort has yet to be exercised in order to make SHP plants environmentally friendly. All the SHP plants impact the environment to a certain extent and alter the river ecosystems. However, this impact is minimal as compared to other energy generation sources. On the positive note, SHP is a renewable, clean and non-polluting energy source. It leaves no wastes and offers significant carbon emissions reductions. Nevertheless, it is possible to employ sustainable ways to build the environmentally friendly SHP plants. In India, environmental awareness to has to be improved and investments in technology research should be made in order to make this sector more sustainable. Lastly, with regards to social sustainability perspective, the development of SHP has resulted in socio-economic progress of the remote areas of India. The villages not only get electrified but these plants also generate employment, promote small-scale industries and improve the infrastructure. Reduced migration of local people from the area, establishment of schools, parks and hospitals are other benefits that these projects bring in. On the other hand, social challenges like resistance from local people, bureaucracy, corruption, unskilled labour, ambiguous government policies, and management problems also exist in this industry. Therefore, towards the sustainable SHP sector, social cohesion has to be promoted, the working conditions of the workers have to be improved and the stakeholder relationships have to be strengthened. In short, all the three pillars of sustainability are being realized to a certain extent. However, to be truly sustainable, a considerable amount of hard work needs to be undertaken.

The researcher has made some recommendations for the foreign investors who may be interested to pursue SHP business in India. The western hydro-companies have better technologies that can be transferred to the Indian markets. The foreign funding can be provided to the IPPs at a low interest rates compared to India and manufacturing/repair facilities can be set up in India. They can also provide consultancy services and even operate these SHP units in case they are looking for continuous long term revenue rather than quick returns.

The researchers mainly focused on the opinions of the IPPs, manufacturers, designers, consultants and representatives of various government organizations that support the development of SHP sector in India and conducted a qualitative research. A future
quantitative study could target the SHP companies all over India to evaluate their sustainability practices through the sustainability indicators.

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How frugal innovation promotes social sustainability

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How Frugal Innovation Promotes Social Sustainability

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Abstract: There is a need to develop an understanding of how frugal innovation promotes social sustainability. The objective of this paper is to find the connections between the two concepts of social sustainability and frugal innovation, by reviewing the existing literature concerning both fields. This paper presents a framework that identifies essential themes of social sustainability and explores them through frugal innovation. The framework builds on the important themes of social sustainability and shows their relevance in practice through frugal innovation. The notion of frugal innovation can be viewed as an approach towards realizing social sustainability and fulfilling the United Nations' Sustainable Development Goals.

Keywords: social sustainability; frugal innovation; practice; Sustainable Development Goals

1. Introduction

Within the sustainability discourse, the social pillar is considered of utmost importance, alongside the other two pillars of sustainable development—environmental and economic. Social sustainability is focused on the development of programs and processes that promote social interaction and cultural enrichment. It emphasizes protecting the vulnerable while respecting social diversity and is related to more basic needs of happiness, safety, freedom, dignity and affection [1]. Notably, the key challenges of sustainable development reside at the interfaces and trade-offs between its various dimensions [2]. Therefore, it is essential to develop the concept of social sustainability by adopting the integrating framework of sustainability [3]. Both the environmental and economic aspects of sustainable development are intertwined with the social pillar. For example, it is perhaps not possible to either achieve happiness in a society that is economically disadvantaged or have a healthy community if air quality is poor. According to Torjman [4], “human well-being cannot be sustained without a healthy environment and is equally unlikely in the absence of a vibrant economy”.

Keeping the above principle in view, this paper seeks to highlight how social sustainability is strongly linked to frugal innovation. “Frugal innovation refers to products (both goods and services), processes, or marketing and organizational methods that seek to minimize the use of material and financial resources with the objective of reducing the cost of ownership while fulfilling or even exceeding certain pre-defined criteria of acceptable quality standards” [5]. Through frugal innovation, economically disadvantaged communities have been able to solve various problems pertaining to health, education or energy and uplift their standard of living. Frugal innovation has made a significant impact on society because it has aimed to solve pressing societal problems through ingenuity while simultaneously generating revenue. It has been argued before that businesses can play a critical role towards achieving sustainable development [6,7] and do untold good for the society [8]. Furthermore, frugal innovation has the potential to improve a company’s sustainability performance [9]. However, the social benefits that frugal innovation can offer to the society have not been discussed considerably.

The objective of this paper is to find the connections between the two concepts of social sustainability and frugal innovation, by reviewing the existing literature concerning both fields.
The researcher argues that the role of frugal innovation towards sustainable development should be studied in depth, better tools should be formed to analyze their relationship [10]; and a strong link should be established between the two concepts. Therefore, it is useful to link the concept of social sustainability empirically to frugal innovation as this connection will further broaden our understanding of the role of frugal innovation towards the promotion of Sustainable Development Goals (SDGs) especially concerning social sustainability. This article contributes to establishing connections by presenting a framework for understanding the link between social sustainability and frugal innovation.

The remainder of this paper is structured as follows: In the next section, the methodological approach is discussed. Section 3 gives an overview of the two important concepts: social sustainability and frugal innovation. Based on the social sustainability and frugal innovation literature, the argument for linking the two concepts is then justified. This section presents various examples of frugal innovations and shows their connection to the themes of social sustainability and SDGs. Thereafter, implications for theory and practice are discussed in Section 4 and the conclusion and future research directions are discussed in Section 5. For the purpose of this paper, the researcher has chosen Littig and Griessler’s definition of social sustainability [11] which is described later in this paper and Tiwari and Herstatt’s definition of frugal innovation [5] which is already described in the introduction.

2. Materials and Methods

A large volume of literature was scanned but a limited number of documents were reviewed and critiqued depending upon their applicability to the topic in discussion. The documents were selected from the social sustainability and frugal innovation literature. The aim was not to read everything written on the topic but to review a representative sample of papers from both bodies of literature in order to gain a sufficient understanding of the topics and establish connections. Two main databases were chosen for this research which include the Web of Science and Scopus. The initial search was undertaken using basic keywords in the beginning of January 2016. The study of the existing body of knowledge concerning two topics—social sustainability and frugal innovation—has been carried out systematically. Figure 1 shows the relative publication volume related to frugal innovation and social sustainability derived from Web of Science Core Collection. It is interesting to note that both the fields of literature have grown exponentially in the last couple of years. It is evident that there has been an increasing interest in both the fields of frugal innovation and social sustainability.

Figure 1. The relative publication volume related to frugal innovation (a) and social sustainability (b), as found in the Web of Science Core Collection.
Therefore, a systematic study was carried out regarding the above mentioned topics in three main steps: (1) material collection; (2) material selection; and (3) material analysis. These three phases are described in the following paragraphs.

2.1. Material Collection

In this step, the researcher aimed at identifying all the relevant material concerning frugal innovation and social sustainability. The main keywords searched in frugal innovation publications included ‘frugal innovation’, ‘jugaad innovation’, ‘bottom of pyramid (BOP) innovation’ and ‘reverse innovation’ because the publications related to these terms are central to the concept of frugal innovation. For publications about social sustainability, the search was conducted using the keywords ‘social sustainability’, ‘social sustainability definitions’ and ‘social dimension of sustainability’.

The researcher also reviewed reference lists from articles to find additional material not previously identified and searched for working papers to explore recent issues regarding these topics. The researcher also identified the relevant studies by searching the journals that were most cited while using the terms frugal innovation and social sustainability according to the Web of Science. Figure 2 lists the most popular publications that included articles on frugal innovation and social sustainability.

![Figure 2. The most cited publications on frugal innovation (a) and social sustainability (b) in Web of Science Core Collection.](image)

Finally, 104 records for frugal innovation and 1593 records for social sustainability literature were identified thereby making the total count of 1697 papers.

2.2. Material Selection

An analysis was performed by reading through the titles and abstracts of the 1697 publications. The abstracts were reviewed to determine whether or not the publications were relevant to the topics in question. Repetitive records as well as multiple irrelevant publications were found. A large number of documents were from diverse fields, such as healthcare, agriculture, sports or operations management, using the term ‘social sustainability’ in the title. Such papers dealt with different research fields and did not address social sustainability. For this reason, most of such papers were excluded. Numerous articles tackled sustainability at a general level, incorporating environmental and economic sustainability perspectives in particular, even with ‘social sustainability’ as the search term. A large volume of articles concerned topics such as renewable energy, smart grids, tourism sustainability, sustainable supply chain management, fisheries and other sustainability issues in
Regarding frugal innovation, open innovation, crowdsourcing, product innovation, and other themes from the innovation management were also found, even though the search terms were precise. The researcher was primarily interested in those papers that helped with specifically understanding the nature and themes of social sustainability and frugal innovation. For frugal innovation publications, the aim was to select those publications that discussed the concepts/dimensions/characteristics of frugal innovation, jugaad innovation, BOP or reverse innovation through theory or practice. For social sustainability publications, the publication was expected to either understand or define the concept of the social dimension of sustainability, show its characteristics or its connections to other dimensions of sustainability.

At the end of this stage, all the perceived irrelevant publications were left out and 91 publications from social sustainability literature and 73 publications from frugal innovation literature were selected thereby making the total count of 164 publications. For the next step, two separate folders were created, one for each topic. All the relevant publications were downloaded in the folders. A set of relevant data was compiled that was thought to be suitable for the review.

2.3. Material Analysis

In this phase, the chosen publications were read carefully, and the characteristics and themes discussed in the frugal innovation literature and social sustainability literature were identified. The focus was on identifying the connections between the two bodies of literature. Important themes of social sustainability were derived from social sustainability literature. They were identified from the previous literature reviews and also from researcher’s own analysis. These social sustainability themes were grouped together to form more profound themes. For example, themes such as ‘equitable access to resources’, ‘equitable access to social services’, ‘equity’ and ‘equitable income distribution’, were grouped together to form a larger theme called ‘social justice and equity’. The aim was to limit the number of derived themes. In total, 23 themes were derived from the literature. Similarly, the characteristics of frugal innovations and their societal implications were also identified from the frugal innovation literature. The works of the authors involved in theorizing frugal innovation were limited. Most of the material dealt with studying individual examples; therefore, the researcher derived the characteristics of frugal innovation from the work of chosen authors. The next step was to show their societal implications by linking them to the themes of social sustainability.

Eight cases of frugal innovations were studied thoroughly and each case was evaluated according to the identified themes of social sustainability. The cases were selected based on three criteria. Firstly, these cases were prominent, having received significant media attention [12]. Secondly, as a group, they were selected to represent frugal innovations from a wide spectrum of organizations. For example, Aravind Eye Care and Narayana Hrudayalaya are hospital chains, Vortex Engineering (Solar Powered ATMs) is a medium sized firm, SELCO and Craftskills East Africa limited are social enterprises, Jaipur Foot is the product of a non-Governmental Organisation (NGO) and Kerala’s palliative care is a charitable society. Lastly, they have all had a positive social impact.

3. Results and Discussion

3.1. What Is Frugal Innovation?

Frugal innovation is considered to be the future of the innovation management and a notion to look out for in the years to come [13,14]. The ultimate aim of innovation management is to create new concepts and move away from existing solutions [15]. Frugal innovation rethinks the nature of innovation. “It is an ability to do more with less by creating more business and social value while minimizing the use of resources such as energy, capital and time” [16]. Frugal innovation is developed in severe resource constraints; it involves good quality and reasonably priced products or services even for the customers with modest lifestyles. Frugal innovations are “good-enough, affordable products that meet the needs of resource-constrained consumers” [13].
Frugal innovation, which involves resource constrained product development, creates numerous benefits that are unavailable from traditional product development. It has the potential to enhance competitive advantage of a firm as well as green supply chain initiatives and be an ideal model to create green products [17]. Generally, frugal innovation is viewed as low cost innovation but it is much more than that. Frugal innovation uses the concept of simplification and strives for less instead of more by using clever technology. All the frugal solutions are characterized by affordability, robustness, user-friendliness, scalability and an attractive value proposition [18]. Frugal innovations are considered to be potentially disruptive and transformational [19] not only for emerging markets but also for developed markets [20].

Bhatti and Ventresca [21] combine historical and current analytical perspectives to define frugal innovation as means and ends to do more with less for more people. Frugal innovation as a term can act as an integrating mechanism to bring various concepts like disruptive innovation [22,23] lean innovation [24], BOP [25] jugaad innovation [26], grassroots innovations [27] and inclusive innovations [28] under one umbrella [29].

The term reverse innovation is often used as a synonym for frugal innovation. However, even though they signify the same notion and are interrelated [30], there is a difference that distinguishes one from the other. “Reverse innovation refers to the case where an innovation is adopted first in poor (emerging) economies before ‘trickling up’ to rich countries” [31]. “Reverse innovations are always built on cost, good-enough, or frugal innovations” [14]. They are clean-slate innovations which means that they have to be developed from the scratch and it involves reversing the way companies approach innovation [32,33]. Agarwal and Brem [34] make the distinction that frugal innovation involves designing solutions specifically for low-income market segments, while reverse innovation involves new products developed in emerging markets, which are then modified for sale in developed countries. “The development of frugal product innovation capabilities is a critical success factor in the development of reverse innovation” [35]. The ability of a firm to exploit the potential of reverse innovation makes it more likely to succeed in global innovation [36].

Frugal innovation is also referred to as Jugaad innovation. Jugaad is a Hindi word that means creative improvisation (thinking in a frugal way and being flexible), which requires quick adaptation to uncertain circumstances in an intelligent way [16,26,37]. However, this term has a negative connotation among innovation scholars due to its meaning—a simple work around—and its usage as opposed to the mainstream innovation process [38,39]. Jugaad, at heart, is about a new model of innovation, which is based on constraints. It means solving a customer problem in the most innovative way when your resources are constrained. Brem and Wolfram [40] present a comprehensive definition of frugal innovation whereby they define it as a “derived management approach, based on jugaad, which focusses on development, production, and product management of resource saving products and services for people at BOP by achieving a sufficient level of taxonomy and avoiding needless costs.”

For developing jugaad or in other words frugal innovations, unusual skillsets and mindsets are required. The most important characteristic of jugaad innovation is that it challenges the standard model of innovation, which involves highly structured and costly research to create new innovations [26]. It is characterized by limited resources to create low cost innovations that are sustainable for the environment and communities. These resource constrained product development strategies have the ability to give rise to products which are environmentally friendly due to lower resource use and greater supply chain efficiencies as compared to conventional product development approaches [17]. Jugaad is a way of survival for consumers at BOP [41].

BOP refers to the largest, and usually the poorest proportion of the world’s population which constitutes an estimated four billion people in the developing world who live on less than $2 per day [42]. The BOP markets are uncertain and volatile [43] and characterized by institutional voids [44]. However, BOP has the potential to offer opportunities to create value for both the companies and the poor [45–47]. Multinational corporations (MNC) ignore the BOP market and focus on existing markets as they view the BOP as unprofitable demographic [48]. However, Prahalad and Hart [25] suggest that
it is possible to profit from the poor by treating them as self-respecting customers. These four billion micro consumers constitute a significant market and represent an engine of innovation, vitality, and growth [42]. By seeing poor as producers [49], co-producers of innovation [50,51], entrepreneurs or innovators [52,53] and not mere receivers, the firms can be successful in the BOP markets. Employing strategies like building local capacity and co-inventing custom solutions with non-traditional partners, these companies and their sustainable innovations can enter the BOP markets with ease [51,54]. Further, the lessons these established companies learn in BOP markets will serve them well in becoming globally competitive [55] and open the way to sustainable growth for the global economy [22]. According to Prahalad and Mashelkar [56], affordability and sustainability replace abundance and premium pricing as drivers for innovation in the developing countries.

Developing frugal innovations for the BOP market requires ingenuity and vision. Be it through MNC or social enterprise, non-governmental organisation (NGO) or small and medium sized enterprise (SME), any kind of entrepreneurial activity at BOP can help eradicate poverty in an economically feasible way [57,58] if the environment is conducive to meeting certain success criteria [59]. It requires an environment which begins with (a) understanding the fundamental needs of the BOP population; (b) creating an entrepreneurial eco-system that involves partnerships with other companies and the public sector; and (c) nurturing an ‘innovation sandbox’ that encourages new ideas [60]. Therefore, the strategies and processes that are delivered to this market have to cope with resource constraints and at the same time either maintain or improve societal, ecological and economic sustainability [21]. The firms that address strategic innovation in BOP markets and address the issues of product affordability, acceptability, availability and awareness can build enormous market value [61]. Over the years, BOP concept has provided a new direction to the thinking of the corporate world [62]. There has been a lot of discussion around poor donning different hats as consumers, entrepreneurs [63,64], producers or suppliers [44,65] across BOP literature. However, viewing poor as value-conscious consumers and creative entrepreneurs in BOP has been subjected to intense criticism. Criticism includes arguments such as it “presents a romanticized view of the poor, grossly underemphasizes the critical role and responsibility of the state in poverty reduction and ignores the vulnerability of the poor and underemphasizes the employability of the poor” [49,66–68], “obscuring unequal power relations at different societal levels and painting an optimistic picture of win-win outcomes at different levels” [69].

Frugal solutions are capable of uplifting the standard of living of individual communities to the next better level [5]. According to Basu, Banerjee and Sweeny [70], “Frugal innovation is a design innovation process in which the needs and context of citizens in the developing world are put first in order to develop appropriate, adaptable, affordable and accessible services and products for the emerging markets”. The frugal mindset was created in emerging markets, especially India and China. Some scholars consider India to be the lead market for frugal innovation [5], while others are of the view that India’s potential as a ‘laboratory for frugal innovations’ is over-rated [71]. Emerging markets have witnessed the frugal mindset for different reasons. Firstly, a large emerging market with a growing middle class and massive purchasing power had needs that were not being met. Their sensitivity concerning product pricing required manufacturers to innovate frugally and keep prices low. Secondly, the expensive workforce in the Western companies made it impossible to develop low cost products and innovate frugally. Thirdly, the manufacturers from emerging Asian markets, especially India and China, focused on the real needs of the customers as opposed to manufacturers in the West, who focused on the wants more than the needs of customers. Therefore, they could not innovate frugally for customers in emerging markets, and the gap was then conveniently filled by companies in emerging markets [72]. Lastly, extreme conditions and major gaps in service provision stimulated demand for low-cost solutions in health, education and energy [12].

The concept of frugal innovation is gaining momentum as the experts have realized that frugality has to be the mindset of every business firm operating in the emerging markets or the developed world. Frugal innovations are becoming popular in developed economies due to their lower costs and no frills
In order to succeed in the emerging markets, the Western companies have to change their approach to innovation. So far, innovation has meant the development of new products with more advanced features at premium prices. However, in emerging markets, companies need to master the art of frugal innovation as economically disadvantaged people are extremely price sensitive. Stripping products of non-essential features and applying sophisticated technologies in order to reduce costs and adopt products to local environments makes the difference between failure and success of such innovations. Therefore, instead of offering outdated technologies from Western markets to emerging markets at lower prices, Western companies need to produce frugal innovations from scratch. These frugal innovators must devise low-cost strategies to handle resource limitations when innovating, developing and delivering products and services to low-income users in emerging markets, where affordability, resources and institutional constraints exist. Frugal innovators need to build innovation capabilities by creating an innovation process that overcomes ‘the deficiency problem’ in generating cheap priced original products. A frugal mindset is encouraged not only by a resource scarce environment but also a higher tolerance for uncertainty. Poor customers in the rich countries also need to be served; to do so, a frugal mindset associated with BOP strategies must be instilled in firms’ business models. There are many reasons for the developed world to embrace frugal innovations which include (a) slow growth in developed economies, which will increase demand for frugal innovations; (b) environmental constraints, which will increase demand for more frugal models of production and consumption; (c) caring for rapidly aging societies, which will require new and frugal approaches to health and social care; (d) understanding that the fastest growing markets are in developing economies, where the demand for frugal products and services is high; therefore, there is a huge business opportunity for Western frugal innovators.

Table 1 identifies the characteristics of frugal innovations and also provides information about the societal implications. The purpose of Table 1 is to give a general idea about the characteristics of frugal innovations included in the literature. It also highlights the importance of societal benefits that result from frugal innovations.

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<thead>
<tr>
<th>Author</th>
<th>Characteristics</th>
<th>Implications for Society</th>
</tr>
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<tbody>
<tr>
<td>Prahalad [42]</td>
<td>Price Performance, Innovation: Hybrids, Scale of operations, Eco-friendly, Identifying functionality, Process innovation, Deskilling of work, Designing for hostile infrastructure, Interaces, Distribution: accessing the customer, Unconventional way to deliver products</td>
<td>Making four billion poor people as customers and treating them as self-respecting citizens by understanding the fundamental needs of the BOP population and innovating for them. Building capacity for people to escape poverty and deprivation. Tackles basic needs, social inclusion, human dignity, participation.</td>
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Table 1. Cont.

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<tr>
<th>Author</th>
<th>Characteristics</th>
<th>Implications for Society</th>
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<tr>
<td>Basu, Banerjee and Sweeny [70]</td>
<td>Ruggedization&lt;br&gt;Light weight&lt;br&gt;Mobile enabled solutions&lt;br&gt;Human centric design&lt;br&gt;Simplification&lt;br&gt;New distribution models&lt;br&gt;Adaptation&lt;br&gt;Use of local resources&lt;br&gt;Green technology&lt;br&gt;Affordability</td>
<td>Needs and context of poor citizens in the developing world are put first in order to develop appropriate, adaptable, affordable and accessible solutions for them. Tackles social coherence, equity, social justice.</td>
</tr>
<tr>
<td>Rajdou, Prabhu and Ahuja [26]</td>
<td>Creative improvisation&lt;br&gt;Innovation based on constraints&lt;br&gt;Unusual skillset and mindset&lt;br&gt;Flexibility&lt;br&gt;Simplicity&lt;br&gt;Social Inclusion</td>
<td>Innovating for the margins of the society and bringing them into the mainstream. Tackles social inclusion, social justice.</td>
</tr>
<tr>
<td>Rao [73]</td>
<td>No frills, low cost products/services&lt;br&gt;robust, sustainable design, ease of use, Strong tendency to disrupt incumbents.</td>
<td>Innovating to harness frugality and improve profitability in a world conscious of cost and sustainability. Tackles human well-being and dealing with poverty.</td>
</tr>
<tr>
<td>Govindarajan and Trimble [32]</td>
<td>Clean-slate innovations (developed from scratch in the developing world)</td>
<td>Closing the wide gaps between the rich and the poor world. Tackles equity and social justice.</td>
</tr>
</tbody>
</table>

3.2. What Is Social Sustainability?

Sustainable development recognizes the interdependence of environmental, social, and economic systems—the three pillars of sustainability which have appeared to understand, address and reduce current, and future potential problems [79, 80]. However, achieving a balance between these three pillars is the need of the hour [81]. The social pillar has not received as much attention as the other two dimensions—ecological and economic [1, 82–87]. Therefore, it is important to explore the role of organizations that organize the sustainability projects in shaping the balance between the pillars [88, 89]. Nevertheless, social sustainability is considered to be the fundamental component of sustainable development [90]. Social sustainability is a multifaceted concept which has often been studied through the lenses of separate disciplines and theoretical perspectives [91, 92]. It is a dynamic concept with a high possibility of change over time. It is unclear what social sustainability really means in practice and what its dynamics and breaks are [11, 88, 92–95].

Spangenberg and Omann [84] identified three analytical views that surround the social sustainability discussions. They include functional approach—popular in studies of rural, urban or community sustainability, capital approach—views from economic thinking, and system approach—views each domain as a system that should be capable of reproduction. During the last 15 years, many researches around social sustainability have focused mainly on the urban studies from both academic and policy perspectives [96]. Weingaertner and Moberg [91] reviewed social sustainability from the perspectives of urban development and the viewpoint of companies and products and identified that context dependency influences the relevance and interpretations of detailed aspects of social sustainability.

Many definitions of social sustainability have emerged so far, but its all-encompassing definition is still missing in policy and practice [96, 97]. Sachs [98] states that “social sustainability must rest on the basic values of equity and democracy, the latter meant as the effective appropriation of all human rights—political, civil, economic, social and cultural—by all people”. From a sociological standpoint, Littig and Grießler [11] state that “social sustainability is given, if work within a society and the related
institutional reproductive capabilities are preserved over a long period of time and the normative claims of social justice, human dignity and participation are fulfilled”. Polese and Stren [99] stated, “social sustainability of a city is defined as development that is compatible with harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups and encouraging social integration, with improvements in the quality of life for all segments of the population”.

One important focus of the definitions of social sustainability is future generations, in that improvement of a society should allow current and future generations to utilize social resources in a healthy way. According to Western Australia Council of Social Services, “Social sustainability occurs when the formal and informal processes, systems, structures, and relationships actively support the capacity of current and future generations to create healthy and livable communities” [100]. Chiu [101] expands on the notion of well-being of generations taken from Brundtland’s definition of sustainable development. Chiu [101] describes social sustainability as the maintenance and improvement of the well-being of current and future generations. Other authors do not provide a definition of social sustainability but suggest the main themes [102], which can be found later in this paper. During the last 10 years, the concept of social sustainability has shifted toward being seen as dependent on social networks, making community contributions, creating a sense of place and offering community stability and security [92,103].

Some authors focus on the attributes of a socially sustainable community. For instance, Vallance et al. [104] describe a socially sustainable community as the one that has certain key elements which include social homogeneity, equitable incomes, access to goods and services, employment and cultural as well as political sustainability. Such a community is equitable, diverse, connected, and democratic and provides a good quality of life [100]. In a more recent study, Missimer, Robert and Broman [105] state that, in a socially sustainable society, people are not subject to structural obstacles to health, influence, competence, impartiality and meaning-making.

Social sustainability is also related to more basic needs of happiness, safety, freedom and dignity [1]. Magis and Shinn [106] define four central constituents of social sustainability: human well-being, equity, democratic government, and democratic civil society. Human well-being ensures the protection of basic needs, equity ensures mechanisms to guarantee equitable sharing of society’s benefits and costs, democratic government ensures that the governance is oriented to the people and the democratic society empowers people to build democratic government.

Larsen [107] states that, “Social sustainability must (a) build inclusion at the level of the individuals, groups and society; (b) provide for basic human dignity which includes at least basic human sustenance, freedom from tyranny, freedom of association, and basic human liberty; (c) provide a means for people to influence their governance; and (d) create the capacity for learning at the level of individuals, groups, collectives, governments, corporations and society”.

Social sustainability is also viewed as a process. According to McKenzie [100], social sustainability is a life-enhancing condition within communities, and a process within communities that can achieve that condition and this condition can be achieved through several factors like equity of access to key services, diversity, political participation at local level, transmitting awareness of social sustainability from one generation to the next, mechanisms of community to fulfil its own needs and so on. In short, “social sustainability concerns how individuals, communities and societies live with each other and set out to achieve the objectives of development models they have chosen for themselves also taking into account the physical boundaries of their places and planet Earth as a whole” [90].

It has been argued that measuring and quantifying social sustainability has been quite challenging [2,108–110] as the indicators are less developed [111,112] because this concept is intangible and qualitative in nature [110] and there is no widely accepted scientific basis for analysis [113]. However, previously many scholars have developed indicators to assess social sustainability. For example, Spangenberg and Omann [84] refer to basic needs, social resources, equal opportunities, participation, sustaining oneself and cultural diversity as the most important indicators. Littig and
Grießler [11] consider satisfaction of basic needs and quality of life, social justice, and social coherence as the three core indicators. Cuthill [82] considers social capital, social infrastructure, social justice and engaged governance as the key indicators of social sustainability. Vavik and Keitsch [1] stress three indicators, namely poverty, illiteracy and access. In a recent study, Tirado, Morales and Lobato-Calleros [114] refer to two indicators—efficiency and equity through which social sustainability can be best promoted. In yet another interesting study, scholars posit to add indicators that reflect the lived experience of disabled people [115]. However, scholars agree that a general consensus about the indicators has been difficult to reach due to its intangible nature and therefore, there is a need to quantify the already existing qualitative indicators [84,110].

Missimer et al. [105,116] even went a little further to question the existing framework for strategic decision making towards sustainability and demonstrated its dichotomies and lack of robustness in its social dimension and developed the ‘Framework for Strategic Sustainable Development’ which could be more cohesive and operational.

Social sustainability plays a strong role in business, and the role of socially driven businesses towards achieving social sustainability is also noteworthy. Currently, businesses are placing greater focus on social sustainability [117]. However, not much work has been done regarding social sustainability as it applies to business [118]. Therefore, more research that investigates the link between social sustainability and organizational effectiveness [119] should be done to obtain a better understanding of the links between business and society to fully address sustainable development [120] and, more importantly, its social dimension.

Theoretically, social sustainability as a concept covers broad societal issues [121] and has various interpretations in different fields [122]. Notably, regarding businesses, social sustainability is understood more generally as a business that influences individuals’ or society’s well-being [110,123] or in other words, a system that meets the expectations of stakeholders without causing harm to the well-being of society and its members [124]. Here, the idea of social sustainability is commonly interpreted as the ability to continue to stay in business through good relations with stakeholders [125]. Social sustainability reflects the development that protects the mental and physical health of the stakeholders, leads to social development and treats all stakeholders fairly [1]. It covers the broadest aspects of business operations and the effects that they have on employees, customers, suppliers, investors, local and global communities. It also focuses on respecting social diversity [1].

It has been argued that businesses adopt top-down approaches to assess sustainability [126] and sometimes create fake reputations regarding their level of sustainability [127]. The indicators used to measure sustainability in overall business do not effectively address social criteria [128]. However, scholars are attempting to address this problem by devising most suitable standards to assess social sustainability in a business. For example, McElroy, Jorna and Engelen [129] have proposed a social footprint method to quantitatively measure and report on the social sustainability of their operations. Another set of standards was proposed by Thomsen and King [130] after evaluating the best business practices of sustainable businesses that could act as a starting point to assess social sustainability. These are workplace practices, work-life balance, retirement benefits, healthcare benefits, safe workspaces, stable housing, support services for children, support for employees in their non-work lives, training and support for the larger community. In recent years, impact investing has become quite popular among business leaders, government, social organisations and philanthropists who are interested in assessing social sustainability of businesses/projects in order to solve some of society’s most pressing issues [131,132]. Many common frameworks are used by impact investors which include Impact Reporting and Investment Standards (IRIS), Global Impact Investing Rating System (GIIRS), Social Return on Investment (SROI), PULSE Impact Investing Management Software, Acumen Fund’s Best Alternative Charitable Option, Endeavor’s Impact Assessment Dashboard, etc. These social metrics are useful tools to evaluate the social or environmental impact of a business and serve as guides for impact investors. These metrics provide guidance to an impact investor while making
investment decisions, identifying and mitigating risks, capturing long term value, tracking progress, improving the project/company, proving impact and attribution and reporting to stakeholders [133].

Businesses can help towards achieving social sustainability provided they fulfil the criteria of socially sustainable businesses. For instance, a socially sustainable business is that enterprise whose aim is to solve the pressing needs of society. It ensures that healthy relationships are maintained with all its stakeholders like employees, customers and community members. An interesting study by Galuppo et al. [134] has shown that building a socially sustainable business requires the management of multi-stakeholder processes that are often conflicting. Therefore, a socially sustainable business can contribute to the worthy goal of sustainability by crafting a “desirable future state for all stakeholders” [135]. It incorporates sustainability principles into everyday practices of a business [136] and, therefore, contributes towards the betterment of community and society at large.

Table 2 identifies the themes of social sustainability that different authors have highlighted thus far. The literature identifies the most important building blocks of what a socially sustainable society should entail. As it is evident from the table, numerous authors point towards similar themes as they remain the primary constituents of social sustainability. The purpose of Table 2 is to give an idea of the concepts included in various discussions of social sustainability. The literature outlined in Table 2 serves to identify what is generally understood by social sustainability.

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health and well-being/well-being of generations</td>
<td>Boström [137], Polese and Stren [99], Magis and Shinn, [106], Chiu [101], McKenzie [100], Castillo et al. [138], Dempsey et al. [94], Guibler et al. [110], Tanzi and Beloff [140], Colantonio and Dixon [141], Rogers et al. [142], Partridge [3]</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>Littig and Grießler [11], Polese and Stren [99], McKenzie [100], Magis and Shinn [106], Spangenberg and Omann [84], Baines and Morgan [143], Ancell and Thompson-Fawcett [144], Colantonio [102], Dempsey et al. [94], Carew and Mitchell [145], Partridge [3]</td>
</tr>
<tr>
<td>Social Coherence</td>
<td>Littig and Grießler [11], McKenzie [100], Vallance, Perkins and Dixon [134], Murphy [146]</td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>Cuthill [82], Dempsey et al. [94], Littig and Grießler [11], McKenzie [100], Magis and Shinn [106], Vallance, Perkins and Dixon [134], Cudding, Hopwood and O’Brien [147], Spangenberg and Omann [94], Murphy [146], Chambers and Conway [148], Thin et al. [149], Koning [85], Sachs [98], Holden [130], Baines and Morgan [143], Polese and Stren [99], Partridge [3], Kenchacha [151]</td>
</tr>
<tr>
<td>Democratic/engaged government and democratic society</td>
<td>Cuthill [82], Magis and Shinn [106], Sachs [98], McKenzie [100], Larsen [107], Davidson and Wilson [152], Dempsey et al. [94]</td>
</tr>
<tr>
<td>Human rights</td>
<td>Bebbington and Dillard [113], Vavik and Keitsch [1], Sachs [98]</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>Polese and Stren [99], Larsen [107], Davidson and Wilson [152], Ancell and Thompson-Fawcett [144], McKenzie [100], Dempsey et al. [94], Bramley and Power [153], Glasson and Wood [103], Partridge [3]</td>
</tr>
<tr>
<td>Diversity</td>
<td>Vavik and Keitsch [1], Polese and Stren [99], McKenzie [100], Spangenberg and Omann [84], Baines and Morgan [143]</td>
</tr>
<tr>
<td>Decline of poverty</td>
<td>Vavik and Keitsch [1], Vallance, Perkins and Dixon [104]</td>
</tr>
<tr>
<td>Social infrastructure</td>
<td>Cuthill [82], Chain and Lee [154]</td>
</tr>
<tr>
<td>Social capital</td>
<td>Cuthill [82], Lehtonen [2], Magis [155], Messer and Keckes [156], Semenza [157], Baines and Morgan [144], Dempsey et al. [94], Vavik and Keitsch [1], Rogers, Gardiner and Carlson [158], El-Husseiny and Keselova [159], Bramley and Power [153], Rocak, Hospers and Reveda [160], Colantonio and Dixon [141]</td>
</tr>
<tr>
<td>Behavioural changes</td>
<td>Vallance, Perkins and Dixon [104]</td>
</tr>
<tr>
<td>Preservation of socio-cultural patterns and practices</td>
<td>Vavik and Keitsch [1], Vallance, Perkins and Dixon [104], Davidson and Wilson [152], Colantonio and Dixon [141]</td>
</tr>
</tbody>
</table>
Table 2. Cont.

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation (Including stakeholder participation)</td>
<td>Littig and Grissler [11], Boström [137], Giddings, Hopwood and O’Brien [147], Spangenberg and Omann [84], Murphy [146], Thin et al. [149], Baines and Morgan [143], U’O’Hara [161], Bramley et al. [162], Dempsey et al. [94], Vavik and Keitsch [1], Galuppo et al. [134], Funk [135], Lindgren et al. [124], Labuschagne, Brent and Eck [128], Brown, Dillard and Marshall [125], Colantonio and Dixon [141], Partridge [3]</td>
</tr>
<tr>
<td>Human dignity</td>
<td>Littig and Grissler [11], Larsen [107], Vavik and Keitsch [1]</td>
</tr>
<tr>
<td>Safety and security</td>
<td>Thin et al. [149], Bramley et al. [162], Dempsey et al. [94], Vavik and Keitsch [1], Glasson and Wood [103], Gauthier [139], Geibler et al. [110], Tanzil and Beloff [140]</td>
</tr>
<tr>
<td>Sense of place and belonging</td>
<td>Bramley et al. [162], Dempsey et al. [94], Glasson and Wood [103], Bramley and Power [153], Colantonio and Dixon [141], Yung, Chan and Xu [163], Yung and Chan [164]</td>
</tr>
<tr>
<td>Education and training</td>
<td>Spangenberg and Omann [84], Dempsey et al. [94], Colantonio and Dixon [141]</td>
</tr>
<tr>
<td>Employment</td>
<td>Sachs [98], Spangenberg and Omann [84], Dempsey et al. [94]</td>
</tr>
<tr>
<td>Community involvement and development, community resilience</td>
<td>Bramley et al. [162], Woodcraft, Hackett, and Caistor-arendar [165], Castillo et al. [138], Bramley and Power [153], Colantonio [102], Landorf [95], Magis [155], U. O’Hara [161]</td>
</tr>
<tr>
<td>Fair operating practices</td>
<td>Bebbington and Dillard [113]</td>
</tr>
<tr>
<td>Capacity for learning</td>
<td>Larsen [107]</td>
</tr>
<tr>
<td>No structural obstacles (to health, influence, competence, impartiality and meaning-making)</td>
<td>Missimer, Robert and Broman [116]</td>
</tr>
</tbody>
</table>

3.3. Establishing a Connection between Social Sustainability and Frugal Innovation: Practical Cases of Frugal Innovation and Their Links to the Social Sustainability Themes and SDGs

Social sustainability takes place when the work within a society and the related institutional arrangements satisfy an extended set of human needs [11]. Therefore, satisfying human needs is the priority of every socially sustainable society where the human well-being forms the foundation of every effort undertaken by society. Frugal innovation is a process whereby the needs of the citizens in the society are put first in order to solve some pressing societal problems. This section consists of practical examples of frugal innovations and shows the connections between frugal innovations and various themes of social sustainability. The researcher tries to illustrate with examples the link that each frugal innovation has with social sustainability and how each frugal innovation promotes the uptake of certain SDG. What emerges from each practical example of frugal innovation is the view that shows the societal benefits of frugal innovations and how such innovations tackle the big concept of social sustainability in their own little ways. Through this connection, the researcher is not trying to show that all the issues of social sustainability will be resolved by frugal innovations, but the purpose is to demonstrate the positive societal effects these frugal innovations have on a society and their potential to fulfill some pressing societal needs.

Following are some practical examples of frugal innovations. This section expands our understanding of the frugal innovations by showing their connections to social sustainability themes and SDGs.

3.3.1. Aravind Eye Care

Aravind Eye Hospital began as a modest hospital with 11 beds and four medical officers; it was created by Dr Venkataswamy in 1976 in India after his retirement, with the mission of eradicating needless blindness. Today, it is one of the largest facilities in the world for eye care and has grown into a network of eye hospitals, which have treated a total of nearly thirty-two million patients and performed nearly four million eye surgeries, the majority of which were inexpensive or free [42].
The Aravind Eye Care System now serves as a model for India and the rest of the world. From the beginning, a policy was put into place—some patients would pay while others received free care. Frugally innovative methods were employed to improve efficiency and help doctors save valuable time between surgeries such as that nurses prepare the next patient while the doctor is operating on a different one; the doctor moves directly from one patient to the next. Each doctor at Aravind performs about 2600 surgeries per year. These measures have pushed down the average cost of surgery [166].

The high level of quality at Aravind attracts patients from all over the world who are willing to pay the market price for their treatment and surgeries. The profit generated from these patients is then used to cross-subsidize and fund free surgeries for poor patients. At Aravind, every patient who can pay covers the costs of two who cannot. Because of high patient numbers, the revenue from paying patients not only covers costs for Aravind’s free services but also generates a surplus that funds growth and expansion. Aravind pays for all its expansion projects from its profits, even though two-thirds of its patients receive free or subsidized care [31].

Aravind started an intraocular lens production facility, Aurolab, in 1992. In the 1990s, there were no lens manufacturers in India. With lenses costing $200, they were not affordable for people in most developing countries. Aurolab devised efficient methods for creating lenses as per international standards. Today, Aurolab provides lenses at the low price of just $2 each and also produces a wide range of ophthalmic products, exporting them to 130 countries around the world [166]. Frugal techniques also dramatically increased the number of cataract surgeries at Aravind and made it possible to deliver high quality eye care, even to the poorest people.

Table 3 illustrates how Aravind Eye Care, a practical example of frugal innovation, promotes social sustainability by addressing its different themes.

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (Aravind Eye Care)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health and well-being/well-being of generations</td>
<td>The eyesight of 45 million people worldwide has been snatched away, often needlessly [42]. Eradication of needless blindness contributes to human well-being.</td>
<td>SDG 3: Aravind Eye Care ensures healthy lives and promotes well-being by providing eyesight to millions of people.</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>By empowering the blind people with the precious gift of eyesight, their quality of life improves.</td>
<td>SDG 8: Aravind Eye Care promotes sustained inclusive and sustainable economic growth and provides productive employment to numerous people.</td>
</tr>
<tr>
<td>Social coherence</td>
<td>By seeking out and catering to the poor blind population and providing them with free treatment, social coherence is being achieved.</td>
<td>SDG 9: Aravind Eye Care has built a resilient infrastructure. It promotes inclusive and sustainable eye care and fosters innovation.</td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>Both rich and poor receive this treatment. Poor patients who would otherwise spend their lives in blindness receive the wondrous gift of eyesight free of cost.</td>
<td>SDG 10: Aravind Eye Care reduces inequality within the country by empowering blind people with the gift of eye sight.</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>By empowering poor and marginalized people with eyesight, Aravind Eye Care eradicates needless blindness thereby promoting social inclusion.</td>
<td>SDG 11: By employing a sustainable Aravind Eye Care model, each doctor at Aravind Eye Care performs about 2600 surgeries per year.</td>
</tr>
<tr>
<td>Decline of poverty</td>
<td>Poor people regain their sight and receive another opportunity to earn a living.</td>
<td>SDG 12: Aravind Eye Care caters to the problem of unemployment by employing numerous people in India.</td>
</tr>
<tr>
<td>Social infrastructure</td>
<td>Aravind Eye Hospital accommodates social services thereby making it an excellent example of social infrastructure.</td>
<td>SDG 16: Aravind Eye Care has emerged as a highly effective and inclusive institution, which promotes social inclusion.</td>
</tr>
<tr>
<td>Social capital</td>
<td>Community accountability and participation, which are distinct indicators of social capital, are clearly evident.</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>Marginalized people are given a second chance at becoming contributing members of society.</td>
<td></td>
</tr>
<tr>
<td>Human dignity</td>
<td>People regain their sight and are able to live a productive life.</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>Aravind Eye Care caters to the problem of unemployment by employing numerous people in India.</td>
<td></td>
</tr>
<tr>
<td>Education and training</td>
<td>Aravind Eye Care collaborates with the World Health Organization to design and offer structured training programmes to eye care professionals at all levels.</td>
<td></td>
</tr>
</tbody>
</table>
3.3.2. Jaipur Foot

One of the best known examples of frugal innovation is Jaipur Foot. It is a prosthetic foot tailored specifically for the poor who otherwise have no access to expensive prosthetics. In the world today, there are approximately 25 million amputees, with that figure growing by approximately 250,000 each year [42]. For the poorest of the poor people in the developing world, losing a limb is devastating; it could impact their ability to provide livelihood for themselves and their families. The original Jaipur Foot was developed in 1968 by Ram Chandra, a sculptor in Jaipur, India. He was frustrated with the lack of an affordable supply of prosthetic limbs. Costing up to $12,000, existing models were completely unobtainable for the majority of the Indian population [12]. Using rubber, wood and tire cord, he designed and manufactured a prosthetic foot for under $45 that had great functionality. Today, over 20,000 individuals each year receive a free Jaipur Foot in India. This is an example of a frugal innovation that has the potential to empower the poor and marginalized people by allowing them to participate in the society, despite their limitations. Table 4 illustrates how Jaipur Foot, a practical example of frugal innovation, promotes social sustainability by addressing its different themes.

Table 4. Promotion of social sustainability through frugal innovations (Example: Jaipur Foot).

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (Example: Jaipur Foot)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health and well-being/well-being of generations</td>
<td>Empowering the poor by allowing them to take control of their lives.</td>
<td>SDG 3: Jaipur Foot ensures healthy lives and promotes well-being by serving amputees.</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>Amputees who receive Jaipur Foot have a better quality life.</td>
<td></td>
</tr>
<tr>
<td>Social coherence</td>
<td>Promotes solidarity by helping poor sections of society.</td>
<td></td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>Rich and poor alike receive this treatment. Poor people, who have no means to afford expensive prosthetics, can still receive the Jaipur Foot free of charge.</td>
<td></td>
</tr>
<tr>
<td>Social inclusion</td>
<td>Social inclusion is about closing the distance that separates people; this frugal innovation does just that by allowing the amputees to live a more productive life.</td>
<td>SDG 10: The Jaipur Foot reduces inequality within the country by empowering amputees with a prosthetic foot and allowing them to lead a more productive life.</td>
</tr>
<tr>
<td>Decline of poverty</td>
<td>People have better employment prospects to therefore support their families.</td>
<td></td>
</tr>
<tr>
<td>Social infrastructure</td>
<td>The organization offering Jaipur Foot to the disabled, Bhagwan Mahaveer Viklang Sahayata Samiti (BMVSS) is the world’s largest organisation serving the disabled and a great example of a social infrastructure.</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>Poor people who lose their limbs become unable to provide for themselves and their families; however, with the help of the Jaipur Foot, they are able to participate in society, despite their limitations.</td>
<td></td>
</tr>
<tr>
<td>Human dignity</td>
<td>It empowers people and helps them continue their lives with dignity.</td>
<td></td>
</tr>
</tbody>
</table>

3.3.3. Kerala’s Palliative Care

Kerala’s Neighbourhood Network in Palliative Care is a system for social care delivered in Kerala, India whereby volunteers from the local community are trained to identify the problems of the chronically ill in their areas and to intervene effectively [12]. The network looks after more than 6000 patients at any given time and all their services are free. More than 5000 community volunteers offer their services without any remuneration. Tens of doctors and nurses who provide expert support are employed by the community. All the resources needed for medicines, food or support for children and salaries are raised from local community donations [167].
Kerala’s palliative care is an excellent example of frugal innovation that promotes social sustainability. This network recognizes the importance of social relationships, feels compassion towards old, sick and needy patients in their society and delivers help selflessly in order to make their society a better place.

Table 5 illustrates how Kerala’s Palliative Care, a practical example of frugal innovation promotes social sustainability by addressing its different themes.

Table 5. Promotion of social sustainability through frugal innovations (Example: Kerala’s Palliative Care).

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (Example: Kerala’s Palliative Care)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health and well-being/well-being of generations</td>
<td>Social care delivered to the chronically ill by volunteers from the local community is an excellent example of promoting human health and well-being.</td>
<td>SDG 3: Kerala’s Palliative Care promotes the well-being of severely sick people.</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>Through Kerala’s Palliative Care, quality of life of the acutely sick people is improved.</td>
<td>SDG 6: Kerala’s Palliative Care is an inclusive institution that works on the principles of social inclusion and social justice.</td>
</tr>
<tr>
<td>Social coherence</td>
<td>It is an excellent example of social coherence, where importance of community is recognized.</td>
<td></td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>Through palliative care, access to basic services for health and well-being to all sick people, irrespective of their differences in status, religion or creed is possible.</td>
<td></td>
</tr>
<tr>
<td>Social inclusion</td>
<td>It promotes inclusion at the level of individuals, groups and society.</td>
<td></td>
</tr>
<tr>
<td>Social infrastructure</td>
<td>Kerala’s Palliative Care is an excellent example of a social infrastructure delivered through communities.</td>
<td></td>
</tr>
<tr>
<td>Social capital</td>
<td>It shows community accountability, responsibility, compassion and social service.</td>
<td></td>
</tr>
<tr>
<td>Behavioral/Attitude changes</td>
<td>Thinking selflessly about the old and sick members of the society and working towards the welfare of the society is the attitude that all communities need.</td>
<td>SDG 16: Kerala’s Palliative Care is an inclusive institution that works on the principles of social inclusion and social justice.</td>
</tr>
<tr>
<td>Preservation of socio-cultural patterns and practices</td>
<td>This innovation preserves the socio-cultural practices of old India, which urban India has forgotten over time. Collectivism has been the essence of Indian culture.</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>Approximately 5000 community volunteers participate in community welfare without a salary and care for more than 6000 patients.</td>
<td></td>
</tr>
<tr>
<td>Human dignity</td>
<td>Palliative care aids chronically ill people and helps them live the rest of their lives with hope.</td>
<td></td>
</tr>
<tr>
<td>Community involvement and development</td>
<td>It is an excellent example of how a community can get involved to deliver social care.</td>
<td></td>
</tr>
</tbody>
</table>

3.3.4. Narayana Hrudayalaya

The Narayana Hrudayalaya Group in India provides world-class cardiac care at radically low costs by applying the philosophies of mass production and lean manufacturing. Heart surgery through this group costs between $2000 and $5000, compared with $20,000–$100,000 in the US. Poor patients are operated on free of charge. At least 60 operations a week are provided to poor patients; yet, the group still manages to maintain a higher profit margin than the average American hospital. The success of the Narayana Hrudayalaya Group is a striking example of frugal innovation in India [12].

This example reflects how frugal innovations and techniques help solve societal problems. Frugal and innovative techniques have helped Narayana Hrudayalaya to not only deliver high quality cardiac care but also address societal needs by helping the poorest sections of society. Even though poor patients receive free treatment, this chain of hospitals maintains a high profit margin due to
efficient and innovative techniques and strategies. Further, it also works towards human well-being and helps achieve social sustainability. Table 6 illustrates how Narayana Hrudayalaya, a practical example of frugal innovation, promotes social sustainability by addressing its different themes.

Table 6. Promotion of social sustainability through frugal innovations (Example: Narayana Hrudayalaya).

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (Narayana Hrudayalaya)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health and well-being/well-being of generations</td>
<td>Offering world class cardiac care at radically low cost promotes human well-being by all means.</td>
<td>SDG 3: Narayana Hrudayalaya ensures healthy lives and promotes well-being.</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>By allowing access to the best healthcare, even to those who otherwise cannot afford it, Narayana Hrudayalaya improves quality of life.</td>
<td>SDG 8: Narayana Hrudayalaya promotes sustained inclusive and sustainable economic growth, and provides productive employment to numerous people.</td>
</tr>
<tr>
<td>Social coherence</td>
<td>Offering free cardiac care to thousands of patients, social coherence is being achieved.</td>
<td>SDG 9: Narayana Hrudayalaya has built resilient infrastructure, promoted inclusive and sustainable world class cardiac care at radically low cost and has employed a highly innovative healthcare model.</td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>Both rich and poor receive this treatment. Poor patients who otherwise cannot dream of highly expensive surgeries, such as those performed in the US, receive it free of charge in India.</td>
<td>SDG 10: Narayana Hrudayalaya reduces inequality within the country by operating people free of cost.</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>By curing poor and marginalized people, Narayana Hrudayalaya promotes social inclusion.</td>
<td>SDG 12: Narayana Hrudayalaya represents an excellent case of sustainable production and consumption; it drastically lowers heart surgery costs through employing the principles of mass production and lean manufacturing.</td>
</tr>
<tr>
<td>Decline of poverty</td>
<td>Poor people regain their health and get an opportunity to earn a living again.</td>
<td>SDG 16: Narayana Hrudayalaya has emerged as a highly effective and inclusive institution that promotes social inclusion.</td>
</tr>
<tr>
<td>Social infrastructure</td>
<td>Narayana Hrudayalaya accommodates social services thereby making it an excellent example of a social infrastructure.</td>
<td></td>
</tr>
<tr>
<td>Social capital</td>
<td>Community accountability and participation which are distinct indicators of social capital are clearly evident.</td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>By providing a micro-insurance scheme that allows poor people to access quality healthcare at INR 5 (11 cents) per month, Narayana Hrudayalaya promotes participation.</td>
<td></td>
</tr>
<tr>
<td>Human dignity</td>
<td>Poor people get a chance to live their lives with dignity.</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>Narayana Hrudayalaya provides employment to numerous people.</td>
<td></td>
</tr>
</tbody>
</table>

3.3.5. Vortex Engineering (Solar Powered ATMs)

Vortex Engineering Private Limited is an innovative Indian company that develops and manufactures Automated Teller Machines (ATMs), which are “highly reliable, rugged, easy to use and eco-friendly” [168]. Their ATMs are specially designed to suit the challenging environment prevalent in rural and semi-urban areas, e.g., unreliable power supply and higher illiteracy levels of end-users [29]. To overcome unreliable power supplies prevalent in rural areas, Vortex Engineering designed and built an ATM with a solar panel that consumes approximately 10% of the total energy requirement of a conventional ATM [168]. The solar model generates less heat and thus eliminates the need for continuous air conditioning [12]; it can cope with temperatures ranging between 0 °C and 50 °C [29]. Vortex ATMs also have a built-in fingerprint identification system, a feature that works well for the uneducated rural masses, which eliminates the need for a personal identification number (PIN). The total cost of ownership for Vortex machines comes to 50% less than that of conventional ATMs [29]. Table 7 illustrates how solar powered ATMs from Vortex Engineering promote social sustainability by addressing its different themes.
Table 7. Promotion of social sustainability through frugal innovations (Example: Vortex Engineering ATMs).

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (Vortex Engineering ATMs)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social inclusion</td>
<td>It promotes social inclusion by providing the BOP population with easy access to ATM technology.</td>
<td>SDG 9: Vortex Engineering is considered a highly innovative company, which designs highly reliable and eco-friendly technology.</td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>It provides poor people with an opportunity to use technology.</td>
<td>SDG 10: It gives poor people an opportunity to use ATMs, even if they are illiterate.</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>The quality of life of rural population improves.</td>
<td>SDG 12: Solar powered ATMs are the most sustainable ATMs made; they consume approximately 10% of the total energy of a conventional ATM and reduce CO\textsubscript{2} emissions by at least 18,500 kg per annum [29].</td>
</tr>
<tr>
<td>Capacity for learning</td>
<td>Provides illiterate people a chance to learn to operate previously unfamiliar technology and build new skills.</td>
<td></td>
</tr>
</tbody>
</table>

3.3.6. SELCO

SELCO Solar Private Limited is a social enterprise in India that works to bring solar power to underserved businesses and households. This company is making solar power a feasible option for the rural population. Its business model is highly innovative, whereby solar power is sold as a service to the poor customers, and micro-loans for these low-income customers are arranged by SELCO itself through the local banks or microfinance organizations, with SELCO acting as a guarantor [169]. SELCO’s model allows the full costs of solar power to be covered over time [12]. Thus far, SELCO has sold over 200,000 solar systems in India [169]. Table 8 illustrates how SELCO, a practical example of frugal innovation promotes social sustainability by addressing its different themes.

Table 8. Promotion of social sustainability through frugal innovations (Example: SELCO).

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (SELCO)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health and well-being/well-being of generations</td>
<td>Less dependency on conventional non-renewable energy resources has a positive effect on the health and well-being of people.</td>
<td>SDG 2: SELCO ensures good health and well-being by enabling people to use clean energy instead of traditional fossil fuels.</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>44% of the Indian population lack electricity. SELCO has provided reliable electricity to millions who otherwise had no or limited access to electricity. This has resulted in a better quality of life. Further, working for longer hours has a positive impact on the income level of BOP population.</td>
<td>SDG 4: Due to uninterrupted power supply, poor students have an increased opportunity to spend more hours studying in the evenings. SDG 7: Solar power is a renewable, non-polluting energy resource. In the absence of such an inclusive business model, it would not have been possible to involve the BOP population as consumers. SDG 8: SELCO has promoted sustained, inclusive and sustainable economic growth and provided employment to many. SDG 9: SELCO’s innovative potential and inclusive business model have been appreciated worldwide. This is evident from the fact that the founder of SELCO received the ‘Asian Nobel Prize’ in 2011 as well as the Ashden Award and the Outstanding Achievement Award [12,179].</td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>Provided an opportunity to BOP population to become respected customers.</td>
<td>SDG 10: SELCO has been successful in reducing inequality in society by enabling poor customers to build links to financial institutions and enabling them to use solar electric systems.</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>Enabled the poorest segments of the population to buy solar electric systems through an innovative business model. Electricity enables them to work for longer hours, which was previously impossible.</td>
<td></td>
</tr>
<tr>
<td>Behavioral changes</td>
<td>Shifting to green energy has resulted in promotion of ecofriendly behavior.</td>
<td></td>
</tr>
<tr>
<td>Education and training</td>
<td>Poor students who had no or limited access to electricity in the evenings can now study longer.</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>SELCO has not only provided employment to its own employees but also to many rural entrepreneurs who rent out solar lights to vendors and institutions.</td>
<td></td>
</tr>
</tbody>
</table>
3.3.7. M-Pesa

M-Pesa is a mobile phone-based money transfer service, launched in 2007 by Vodafon for Safaricom and Vodacom in Kenya and Tanzania. Since its launch in 2007, M-Pesa has expanded to other countries like Afghanistan, South Africa, India, Romania and Albania. M-Pesa allows users to deposit, withdraw, transfer money and pay for goods and services easily with a mobile device [171]. The service enables its users to deposit money into an account stored on their cell phones, withdraw or transfer money to other users and non-users, pay bills and purchase airtime. Users are charged a small fee for sending and withdrawing money using the service. It is a branchless banking service whereby the M-Pesa users can deposit and withdraw money from a network of agents like airtime resellers and retail outlets [171].

M-Pesa has become the most successful mobile financial service in the developing world. This service has given access to the financial system to millions of people and it has been recognized for reducing crime in an otherwise largely cash-based society [172]. Table 9 illustrates how M-Pesa, a practical example of frugal innovation, promotes social sustainability by addressing its different themes.

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (M-Pesa)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic needs and quality of life</td>
<td>M-Pesa has improved the quality of life of millions of BOP customers by empowering them with branchless banking service.</td>
<td>SDG 1: M-Pesa has reduced poverty in the regions of its operation.</td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>It provides an opportunity to millions of poor people to become respected customers.</td>
<td>SDG 3: M-Pesa has been involved with Bridge International Academy which provides education to poorest areas of Kenya at a very low cost ($4 in monthly tuition per student).</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>It promotes social inclusion by providing the poor population with an access to financial services that they were otherwise devoid of.</td>
<td>SDG 8: M-Pesa has promoted sustained, inclusive and sustainable economic growth.</td>
</tr>
<tr>
<td>Decline of poverty</td>
<td>M-Pesa program has transferred more than US$1.4 trillion in electronic funds and significantly contributed to poverty alleviation [173].</td>
<td>SDG 9: M-Pesa is a highly innovative solution, which has dramatically improved the lives of millions of people.</td>
</tr>
<tr>
<td>Capacity for learning</td>
<td>It provides people with an opportunity to operate mobile phone technology and build new skills.</td>
<td>SDG 10: M-Pesa has succeeded in reducing inequality in society by enabling BOP customers to build links to financial services.</td>
</tr>
<tr>
<td>Safety and security</td>
<td>Research has indicated that services like M-Pesa might play a significant role in anti-money laundering and counter-terrorist financing efforts [173]. It is also a safe alternative to travelling with large amounts of cash.</td>
<td>SDG 12: M-Pesa is an excellent case of sustainable mobile phone based financial service.</td>
</tr>
<tr>
<td>Human dignity</td>
<td>This service has improved the lives of millions of Kenyans.</td>
<td></td>
</tr>
<tr>
<td>Participation (Including stakeholder participation)</td>
<td>Since the launch of M-Pesa in 2007, over 15 million users have been using the service [173].</td>
<td></td>
</tr>
</tbody>
</table>

3.3.8. Craftskills East Africa limited

Craftskills East Africa limited is a social enterprise in Kenya that sells renewable energy equipment to farms, village collectives and small businesses in East Africa. It builds wind power generation devices from local materials to supply energy to small, dispersed off-grid African villages [174,175]. The local materials include old motorcycle engines, which are essential components of wind turbines. Craftskills’ wind turbine is an excellent example of an affordable and resource-scarce solution that serves the customers of Kenya with a reliable and easy-to-use product at a low price [176]. Craftskills has been successful in supplying equipment that in some cases light the whole village and, in other cases, the electricity generated is used for water pumps that supply irrigation and clean
drinking water [174]. Craftskills East Africa limited solves the pressing problem of lack of electricity in Kenya by making cheap yet efficient wind turbines for the Kenyan people and supplies affordable clean energy to them. Table 10 illustrates how Craftskills East Africa limited, a practical example of frugal innovation, promotes social sustainability by addressing its different themes.

Table 10. Promotion of social sustainability through frugal innovations (Example: Craftskills East Africa limited).

<table>
<thead>
<tr>
<th>Themes of Social Sustainability</th>
<th>Promotion of Social Sustainability through Frugal Innovations (Craftskills East Africa Limited)</th>
<th>Promotion of SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health and well-being/well-being of generations</td>
<td>Use of wind power has positive health benefits compared to non-renewable energy resources.</td>
<td>SDG 3: Craftskills ensures good health and well-being by enabling people to use clean wind energy instead of traditional fossil fuels.</td>
</tr>
<tr>
<td>Basic needs and quality of life</td>
<td>Craftskills has provided clean electricity to people who otherwise had no or limited access to electricity. They have also supported farms by selling them electricity equipment for water pumps used for agricultural purposes.</td>
<td>SDG 7: Wind power is a renewable, non-polluting energy resource. Craftskills ensures access to affordable, reliable and clean energy to Kenyan people.</td>
</tr>
<tr>
<td>Social justice and equity</td>
<td>It provides an opportunity to BOP population to become respected customers.</td>
<td>SDG 9: Craftskills’ ability to generate frugal innovation in a resource constrained environment and create more from less is a step towards building resilient infrastructure.</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>Poor segments of population get an opportunity to buy reliable wind turbines at low costs and electrify their homes.</td>
<td>SDG 10: Craftskills has been successful in reducing inequality in society by providing poor people an access to electricity.</td>
</tr>
<tr>
<td>Behavioral changes</td>
<td>In Africa, renewable energy is perceived as second class [175]. Motivating people to use electricity generated through green wind energy turbines is a positive behavioural change that promotes ecofriendly behaviour.</td>
<td></td>
</tr>
<tr>
<td>Human dignity</td>
<td>Electrifying villages or supplying power to schools, health facilities, market places or hotels has changed the lives of people in BOP market like Kenya.</td>
<td></td>
</tr>
</tbody>
</table>

From the discussion above, it can be argued that frugal innovation can be considered as one practical step towards realizing social sustainability. Figure 3 shows the connection between frugal innovation and social sustainability through linking frugal innovation to the social sustainability themes. Every frugal innovation promotes various social sustainability themes.

For example, the social sustainability themes shown in Figure 3 can be seen as consequences of the frugal innovations, with some themes recurring in almost all the cases such as social inclusion, human well-being, quality of life, equity and so on.
Figure 3. Connection between frugal innovation and social sustainability.

4. Implications for Theory and Practice

This study is an attempt to show a connection between frugal innovation and social sustainability. The researcher believes that frugal innovation and social sustainability are intertwined, and this study is one of the initial attempts at this integration. Eight cases of frugal innovation were analyzed in the light of social sustainability themes. Based on the findings drawn in relation to social sustainability, the implications of this study will be discussed.

In almost all the cases of frugal innovation, important themes of social sustainability are visible. Through these practical cases, it is seen that issues like human well-being, basic needs and quality of life, social justice, social inclusion, poverty reduction, learning capacity and many other social sustainability themes are being addressed. All the frugal innovation cases offer solutions to existing societal problems. Firstly, frugal innovation helps in closing the distances that separate people by promoting connectedness within and outside the community, which is one of the most important principles of social sustainability [100]. Frugal innovation is one way to solve the challenges of social inclusion in BOP markets. Secondly, human well-being is also an essential outcome of frugal innovations. In all the examples mentioned above, human well-being is being promoted. An interesting example is Neusoft, China’s IT service provider which has developed telemedicine applications for millions of Chinese living in rural areas that deliver affordable healthcare to poor people [26]. Thirdly, in BOP markets, where there is unequitable distribution of resources, through some frugal innovations, even the poorest sections of society also gain access to essential services. Jaipur Foot, Aravind Eye care, Vortex ATMs, SELCO, M-Pesa and Narayana Hrudayalaya are examples of such frugal innovations. Equity ensures mechanisms that guarantee equitable sharing of society’s benefits and costs [106]. Through frugal innovations, it has become possible to provide opportunities and access to the basic
amenities for the poorest of the poor. Lastly, frugal innovations work towards the goal of social coherence, whereby members of a society play an active role in assisting marginalized communities. Social coherence is a measure of solidarity among the members of a society. Social sustainability of a society can be evaluated in terms of how well the society is involved in activities and how tolerant its members are towards, for instance, marginalized groups [11]. Through some frugal innovations, such as Kerala’s Palliative Care, the goal of social coherence is achieved, and a feeling of passion towards helping community members is evident. Frugal innovation plays an important role in fulfilling social sustainability; it promotes SDGs and contributes towards the larger goal of sustainable development. The most common SDGs promoted by the frugal innovation cases presented above include SDGs 1, 3, 4, 7, 8, 9, 10, 12 and 16. Therefore, it can be implied that application of frugal innovation in a society is a tiny step towards realizing sustainable development.

With regards to managerial practice, this research may be useful for frugal innovators who could benefit from this knowledge. Most often, frugal innovators innovate to solve a pressing societal need; if they become aware of this link between frugal innovation and social sustainability, they could perhaps market their products even better and show the impact of these products from a larger perspective. They can more easily evaluate the benefits of the connection between these concepts and use this information while promoting their frugal innovations.

5. Conclusions

The literature concerning social sustainability and frugal innovation was reviewed, and it was discovered that the two fields of study are connected. The essential themes of social sustainability were studied, and their relation to frugal innovation was explored. The results of this study are particularly novel in that frugal innovation has not been linked solely to social sustainability prior to this research. Social sustainability is one of the most important pillars of sustainable development and, through this paper, it is possible to realize social sustainability goals via the application of frugal innovation. The role of frugal innovation towards promoting SDGs concerning social sustainability is emphasized.

Socially sustainable societies provide equal access and opportunities to all members for both survival and the fulfillment of their development potential [147]. In the business context, MNCs have failed to give equal access to their products and services. They have innovated for the top of the pyramid customers, who can afford their innovations. However, thus far, they have ignored the BOP customers, treating them as unprofitable sections of the population [42]. In contrast, frugal innovators intentionally seek out opportunities with these underserved customers. Frugal innovators pull poor customers into the mainstream, innovate for them and provide affordable and viable solutions to their needs. Therefore, businesses that innovate frugally contribute towards societal goals alongside economic ones.

This article argues that social sustainability may be expanded to incorporate a stronger emphasis on practical ways to fulfill socially sustainable goals. For instance, practical contributions of frugal innovation towards solving certain pressing social needs have been explored in this paper. Many examples have been provided that show the exemplary contribution of such frugal innovations towards society while also showing connections between social sustainability and frugal innovation.

This study may have its limitations. The researcher did not have any access to better instruments to measure the social sustainability of frugal innovations. Therefore, the researcher was limited to deriving social sustainability themes and using SDGs as a basis for measuring social sustainability. It is certainly a little-researched field and therefore, a good follow-up study is recommended that can demonstrate a stronger relationship between the two researched concepts. Some frugal innovation case studies from different BOP countries and their links to social sustainability could be studied. This could enrich our understanding of these innovations and their links to positive societal transformation in different BOP markets. It would also be beneficial to study the role of socially driven businesses and innovations towards achieving social sustainability. Measuring the social sustainability of frugal
innovations is challenging; hence, to enhance the understanding of this relationship, it is important to devise better indicators, which will make it possible to measure this relationship more accurately.

The multidisciplinary nature of social sustainability has made it possible to view this field through a different angle. The essential themes of social sustainability presented, along with the practical examples from frugal innovations, offer a different viewpoint on the connections between the two different fields.

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