

Social innovation in an era of climate change: Moving from conceptual debates to action on the ground

Ping Huang ^{1,2,*}, Vanesa Castán Broto ², Linda Westman ²

1. *The Institute for International Affairs, The Chinese University of Hong Kong, Shenzhen, China*

2. *Urban Institute, Interdisciplinary Centre of the Social Sciences (ICOSS), University of Sheffield, UK*

* Corresponding author at 2001 Longxiang Boulevard, Longgang District, Shenzhen, China

E-mail addresses: huangping@cuhk.edu.cn

Abstract: Against the background of climate change, there is increasing pressure to ensure social justice during structural transitions of human society. Delivering a just transition depends on meaningful engagement of social innovation in both action and research. Building upon a systemic review of the origins and contemporary conceptualizations of social innovation in the literature, this paper proposes an Ends-Means framework that focuses on understanding how social innovation takes place on the ground. The paper is demonstrated in reference to two empirical cases of social innovation. The contributions of the Ends-Means framework to social innovation research are threefold: first, recognising the inherently dynamic and temporal character of social innovation; second, transcending the cliché view of the separation between technological innovation and social innovation; third, situating social innovation in relation to place-based practices of climate action. Social innovation depends on highly dynamic and contingent process that cannot be captured in a single definition.

Keywords: just transition; social innovation; social means; social ends; climate action

1 Introduction

Curbing emissions remains a significant challenge for all nations. Some actors frame this challenge as an opportunity for the reconfiguration of economies, societies and infrastructure systems. This transition has raised concerns about the distribution of costs and benefits (COP24, 2018). The International Labour Organization emphasises how the delivery of social justice is closely tied to innovation policy and the possibility of shared learning (ILO, 2015). Delivering a just transition depends on social innovation that supports new ways of thinking and governing a low emission society (Hiteva & Sovacool, 2017).

Social innovation represents “an effective way of responding to social challenges, by mobilising people's creativity to develop solutions and make better use of scarce resources” (BEPA, 2010). The general assumption is that, when addressing societal challenges such as the just transition, social innovations might play a more significant role than technical innovations (Avelino et al., 2019). As a research field, social innovation has long been criticised for its conceptual ambiguity and fragmentation (Dawson & Daniel, 2010; Van der Have & Rubalcaba, 2016). With its increasing popularity in academic circles and public discourses, social innovation has become an all-encompassing concept. To a certain extent, this has hindered meaningful engagement of social innovation in both action and research (Rüede & Lurtz, 2012; Van der Have & Rubalcaba, 2016).

We argue in this article that a shift from conceptual debates to a focus on concrete actions on the ground is essential to harness the power of social innovation to advance just transitions. Social innovation encompasses a range of contradicting and diverging perspectives. There is a need to recognize social innovation as a highly dynamic process and to capture its plasticity and temporality. This means that, on the one hand, social innovation might be understood from multiple dimensions and perspectives and hence studying and practicing social innovation can be quite subjective; on the other hand, social innovation is not a static, one-time, and isolated event but rather evolves with changing circumstances. To characterise social innovation as a diverse concept, we propose a four-legged analytical framework that clarifies the analytical operation of different concepts of social innovation while also recognising that the inherent potential of the concept lies in its openness to multiple interpretations and applications. The framework is based on a means/ends distinction which characterises much of the literature on social innovation and links it back to the concern with justice that permeates contemporary debates on transitions.

The article is structured as follows. Section 2 explains social innovation as a concept with inherent ambiguity and reviews two traditions of thinking (social and economic) of social innovation. Section 3 provides an assessment of a potential framework to evaluate social innovation: the Ends-Means framework. Section 4 presents two cases of social innovation to illustrate how the Ends-Means framework contributes to engagement with action on the ground. The article is concluded in the last section.

2 Tracing the origins of the concept of social innovation

The field of social innovation echoes the traditions of different disciplines such as sociology, management studies and political science, pointing toward the diverse points of view that are addressed under one single concept (Pol & Ville, 2009; Rüede & Lurtz, 2012). Social innovation is a dynamic concept whose meaning is constantly evolving. There are, however, two distinct, though sometimes overlapping, currents of thought that have influenced contemporary thinking on social innovation, which for simplicity, we have termed the economic and the sociological perspectives on social innovation.

In evolutionary economics, history, institutions and individuals all play a role in bringing about the changes that shape economic systems. Social innovation explicitly recognises the sociological drivers of the economy. Innovation is thus a positive force behind the evolutionary change towards greater prosperity. Schumpeter (1942)'s famous definition explained innovation as a disruptive force that introduces novelty into economic systems through 'creative destruction'. In this process of innovation conceptualized by Schumpeter, the social component of innovation takes a rather marginal position and is largely limited to the interactions between actors. A key legacy of Schumpeterian thought is the inseparable connection between innovation and economic development. Schumpeter's view established the positive perspective on innovation as an engine of prosperity (Godin, 2015). Social innovation emerged as a contrasting term that captures forms of innovation that escape the general analysis of innovation in the Schumpeterian perspective, and which are not uniquely explained through the connection between industrial and economic development. In this sense, social innovation can be defined as innovation in the conventional Schumpeterian sense, but always associated to a social purpose. The subfields of sustainable innovation, social entrepreneurship, and corporate social responsibility present different versions of

this approach. Therein, the economic tradition focusses on the role of social innovation as a form of innovation that delivers social externalities alongside capital profits.

On the other hand, the sociological tradition of innovation follows the building blocks of early social psychology, in particular the work of Gabriel De Tarde. De Tarde focused on an ontological theory of social behaviour that explained the development of culture. Cultural and social change, he argued, depended on the penetration of inventions that diffuse through a process of imitation, whereby individuals imitate beliefs, desires, and motives (De Tarde, 1903; Kinnunen, 1996). In De Tarde's universe, imitation is a manifestation of a general law of universal repetition. Central to De Tarde's theory of imitation is a broad perspective on innovation as any activity that generates new outlets for social activities, always through original combinations and adaptations of existing imitations (Djellal & Gallouj, 2014). De Tarde conceptualised innovation as part of a wider universe of human imitation, whose impacts on social change - and hence their characterisation as true invention - are not always predictable. Societies themselves are constructed through a game of resemblances and similarities that are actively produced through imitation (Djellal & Gallouj, 2014). The 'social' is thus a constitutive component of innovation, while innovation is integral to shaping all patterns of human behaviour. De Tarde's conceptualisation of innovation challenges the idea of social innovation as a separated component, and instead situates it as a core component of the innovation process itself.

Recent years have seen growing efforts to synthesize the theories of social innovation and to develop a more holistic view of the phenomenon (Cajaiba-Santana, 2014; Domanski et al., 2020). For instance, Baptista et al. (2019) relate different forms of social innovation to the level of policy support, the profit orientation and the geographical scale. However, ongoing conceptual disputes distract scholars from social innovation activities on the ground. Taking inspiration from De Tarde's expansive conceptualisation of innovation and its operation in society, we seek to expand and clarify current interpretations of social innovation to engage climate action across different contexts.

3 The Ends-Means framework for social innovation

This section aims to transcend the impasse between conceptual debates and the need to mobilise a useful notion of social innovation on the ground. This is achieved by building on the expansive notion of social innovation that De Tarde's ontology inspires.

In the expansive body of literature on social innovation, there are four widespread understandings of the concept, including pure social innovation, innovation for social goods, corporate social innovation, and social innovation as new relations and practices. *Pure social innovation* purports to represent "innovations that are social both in their ends and in their means" (BEPa, 2010). This definition understands social innovation in the narrowest sense. Alternatively, social innovation is understood as *innovation for social good*, regardless of the means of the innovation. Compared to the strand of pure social innovation, this emphasizes social value but is less strict about whether the means are social or technological (Borzaga & Bodini, 2014; Cajaiba-Santana, 2014; Domanski & Kaletka, 2017; Howaldt & Schwarz, 2010). Originating from an economic tradition, *corporate social innovation* represents a type of profit-seeking social innovation (Borzaga & Bodini, 2014), in which "the generation of profits is a central issue" and "profit-making is an integral part" (Tabares, 2020) (p. 325). This interpretation represents an 'economic approach' to social innovation because social benefits are achieved alongside profits (Baptista et al., 2019). Lastly, there is an understanding of social innovation in the widest sense as *new relations and practices*. This perspective emphasizes the

fundamental role of the social context in constituting innovation (Van der Have & Rubalcaba, 2016). Under this line of thought, social innovation is conceived as new social practices manifested in changes of attitudes, behavior, or perceptions (Cajaiba-Santana, 2014).

Following several decades of development, the concept of social innovation is applied to “an extremely heterogeneous set of initiatives and organisations, ranging from the interventions of the third sector as a whole, to public policy initiatives, to the actions of for-profit organisations that have even a marginal social impact” (Borzaga & Bodini, 2014). Table 1 provides a comparative overview of the definitions and interpretations reviewed above. The table demonstrates the lines of struggle that structure these debates.

Table 1. Means and ends components of different interpretations of social innovation

Interpretation of social innovation	Central emphasis	Relationship with traditions of social innovation thought
‘Pure’ social innovation	Focus on both the social means and the social outcomes of innovation	Opposite to the understanding of social innovation in the economic perspective; A strict distinction to technological/business innovation
Innovation for social good	Focus on social outcomes of innovation	Economic profit not assumed, but aligned with the separation between social and purely economic innovation in the economic perspective
Corporate social innovation	Focus on tying social outcomes to economic benefits of social innovation	Closest to the understanding of social innovation in the economic perspective; Economic profit is a condition inherent to social innovation
New relationships of practices	Focus on facilitating innovation processes through new social relations	Closest to the understanding of social innovation in the sociological perspective; A more radical sociological reading of social innovation that goes beyond the ends-means nexus

One struggle centres around the definition of the “social” and to what extent social innovation can be distinguished from “non-social” forms (e.g., technological innovation, business innovation). If non-social innovations exist in a socio-technical reality, such distinctions may be impossible. In this sense, Pol and Ville (2009) argued that since innovation always involves cognitive change, it is always social. Such arguments bring us back to De Tarde’s earliest efforts to theorize invention as a mechanism that is central to all forms of social change. This expansive view essentially allows us to

dispense with the qualifier 'social'. However, most scholars would recognise distinct forms of social innovation embedded in processes of change, where the focus of the analysis differs: the emphasis may be changing social networks, institutions, and structures rather than material and resource dependencies. This also means that the purposes of social innovation, the main actors, and the key characteristics will vary across different forms of social innovation (Avelino et al., 2019; Pel et al., 2020).

A second line of conflict is whether social innovation should represent a social value or not (Ayob et al., 2016; Domanski & Kaletka, 2017). The business school perspective (the economic tradition) highlights the beneficial aspects of social innovation, treating it as an 'appraisive' concept, that is related to the attribution of value (Ayob et al., 2016). We can understand this development as a social turn in the technology-oriented and commercial traditions on innovation – essentially an effort to harness the power of business-led innovation for the benefit of social good. This strand of the literature represents a normative and utilitarian approach that attaches a (social) 'purpose' to social innovation (Howaldt & Schwarz, 2010). For example, Dawson and Daniel (2010) contended that the objective of social innovation is the improvement of collective well-being. Howaldt and Schwarz (2010) also considered that social innovations need to be 'socially desirable' in an extensive and normative sense. Pol and Ville (2009) coined the term 'desirable social innovation', which they defined as innovation that improves the macro-quality of life or extends life expectancy. By labelling social innovation as desirable or not, observers are forced to make a value judgement, making the concept prisoner of subjective evaluation. Some argue that, for scholars of social innovation, the task of making explicit value judgements is inherent to the analysis. As explained by Phills et al. (2008), 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 (p. 36)."

Nevertheless, according to the sociological tradition, this normative assessment does not acknowledge the process-based character of social innovation. Social innovation's more compelling analyses portray it as creative, collaborative and targeted practices to redefine social relations. Recognising the processual character of social innovation entails the rejection of value judgements of social innovation as something inherently 'good', since the outcomes might be undesired and with unintended or unexpected consequences (such as disempowerment of certain social groups) (Franz et al., 2012). Cajaiba-Santana (2014) criticized the instrumental view of social innovation as 'a teleological mistake' (p. 44). They advocated instead a neutral definition of social innovation, excluding any pre-assumptions of either the intention or the outcome of innovation (Haxeltine et al., 2016).

We argue that current focus of academic debates has hindered meaningful engagement with the concept of social innovation in action, among activists, policy makers and social entrepreneurs for whom the idea of social innovation is a source of inspiration. Wide practices of innovation that do not fit strictly economic conceptions of innovation proliferate, to address real-life challenges from the provision of care to the delivery of responses to the climate and biodiversity crises. At the same time, a blanket approach of innovation as inherently social, in a De Tardian sense, loses the rich characterisation of social innovation that makes it appealing to social entrepreneurs who adopt the concept in practice. Most scholars relate the relative conceptual ambiguity inherent to the concept

to its dynamic character, as a concept which is continuously evolving (Baptista et al., 2019; Moulaert et al., 2013). In all the four perspectives discussed above, and the critiques proposed, social innovation emerges as the result of a tension between the ends and means of innovation- a tension which we believe provides further analytical clarity to engage the variety and temporality of practices of social innovation.

Tensions around the conceptualization of social innovation in the scholarship can serve as building blocks for a framework of analysis. Through a systematic bibliometric analysis of social innovation literature, Van der Have and Rubalcaba (2016) identified two 'core conceptual elements' of social innovation: a change in social relationships, systems or structures and a shared human need/goal. Social means and social goals, the authors argued, are like the two sides of the same 'social innovation coin'. Similarly, Ayob et al. (2016) observed that there are two primary sets of understandings on social innovation, defining 'social' either as the (social) processes leading to the innovation (De Tarde, 1899) or the (societal) consequences of the innovation (Hoggan, 1909). The dual dimensions of process and outcome (Van der Have & Rubalcaba, 2016), namely means and ends, provides a workable framework to coordinate social innovation literature and activities.

First, the means of innovation can be either social or technological (Franz et al., 2012; Wittmayer et al., 2020). Examples of social means include ways of doing (Haxeltine et al., 2015), forms of collaboration or the organization of social structures (Van der Have & Rubalcaba, 2016). The means of innovation can also be technological. In some cases, scholars emphasize the pivotal role of technological inputs in social innovation activities. For instance, Mulgan et al. (2007) listed some types of social innovations that contain a high technology component, such as the Open University and distance learning using Linux software to build a knowledge exchange platform. Analyses of means of innovation build primarily on processual views of innovation derived from the sociological literature on innovation.

Second, directly echoing the two thinking traditions of social innovation, the ends of innovation can be either social or economic. Although social innovation is always attached with social goals, the preoccupation with profitability permeates social innovation debates (Borzaga & Bodini, 2014). In fact, the separation between social ends and (profit-oriented) economic objectives is inherent to the definition of 'desirable social innovation' (Pol & Ville, 2009). Scholars that emphasize the economic ends of social innovation often argue that social innovation comes to fill the gaps in social need ignored by the market in "the production of many new ideas that (at least initially) are not created with the purpose of making money" (Ibid, p. 883).

Based on the two linked dimensions of social innovation activities, we propose an Ends-Means analytical framework that reveals both the process (means) and the outcome (ends) of social innovation (Figure 1). By proposing this framework, we argue that different perspectives of social innovation can be apprehended from a vantage view that interrogates not the purpose and character of social innovation, but how certain initiatives come to be understood as social innovation and with what consequences. Such a perspective adopts the expansive view of innovation hinted at in the sociological perspective of innovation, but without discarding the factors that make social innovation distinct in a capitalist society. This distinction serves to acknowledge the literature but does not intend to divide social innovation into 'types.' Although the two axes in Figure 1 create four quadrants, the boundaries between the quadrants are not absolute. Instead, the

four quadrants can help us to map out the main narratives of social innovation that influence current debates and the different manifestations of social innovation.

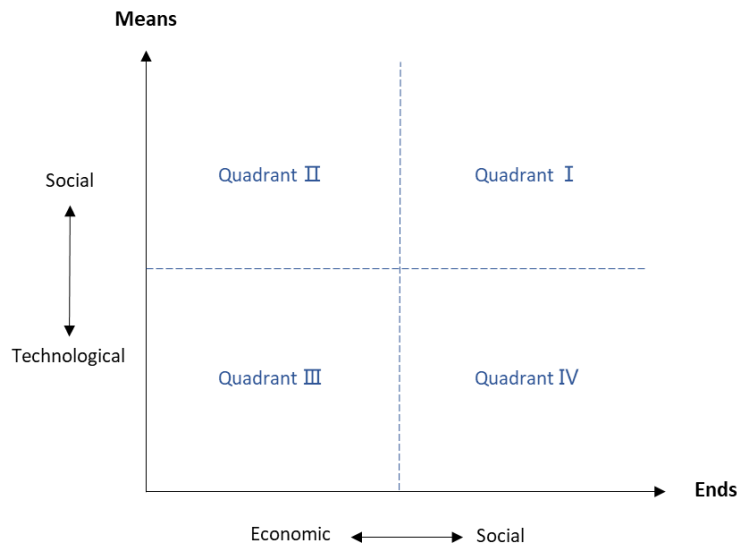


Figure 1. The Ends-Means framework for social innovation

An immediate function of the Ends-Means framework is to sort out the puzzles of various and very often overlapping interpretations of social innovation in the literature. To a great extent, these contradictions have hindered meaningful engagement with the concept in both action and research, especially in face of the acute impacts of climate change. For instance, the strand of pure social innovation literature (Leadbeater, 2007; Manzini, 2012; Marcy & Mumford, 2007; Morelli, 2007; Pot & Vaas, 2008; Regalia, 2006) defines social innovation in terms of both social means and social ends and hence represents the narrowest conception of social innovation that falls into Quadrant I. The strand of ‘innovation for social good’ that requires a social value of social innovation falls into Quadrant I and Quadrant IV. ‘Corporate social innovation’ emphasizes the economic value of innovation and can be located in Quadrant II and Quadrant III. Lastly, the sociological reading of social innovation that conceives social innovation as ‘new social relations or practices’ embraces the widest spectrum of social innovation practices, and might be situated in any of the four quadrants of this framework (see Table 1).

The Ends-Means framework is an attempt to achieve practical clarity in social innovation through the recognition and inclusion of conceptual ambiguity. The framework is designed under the principles of being ‘useful to guide research’ and offering ‘a scope large enough to accommodate a significant number of relevant empirical cases’ (Pol & Ville, 2009). The basic stance of this analytical framework is that there is no ‘correct’ definition of social innovation, and there will never be one (for the whole social innovation community). In practice, researchers and practitioners choose the definition that best fit their research or practical purposes. The Ends-Means framework does not contradict the tenets of evolutionary economics because it recognises both the histories and institutions that produce innovation, attending both at practices and objectives. At the same time, the Ends-Means framework is able to accommodate an expansive view on innovation that recognises the embeddedness of imitative and generative practices in human life.

Moreover, the Ends-Means framework challenges crude differentiations between social and technological innovation. The domains of technological and social innovation often overlap, and it is

difficult to draw a clear boundary between the two; on the other hand, there is always a temporal dimension for each social innovation initiative, meaning that what starts as a (pure) social innovation initiative might end up more technological- or economic- oriented. The Ends-Means framework captures this sense of operating alongside a continuum marked by hybridity in intentions, operations and results. The debates on social innovation thus echo those in other fields of scholarship that aim to understand social change as a means to deal with larger social and environmental challenges. For example, debates on just transitions and environmental justice mostly oscillate between an emphasis on processes of justice (how) and outcomes (what) (e.g., Castán Broto and Westman, 2019). The challenge is that this dichotomic perspective evades fundamental observations such as, for example, that any process of social change has an outcome, and that the outcome is inherently shaped by the process. Similarly, social innovations are themselves innovations in process, and ends contain the processes of social innovation in themselves. It is precisely this dynamic character of social innovation that makes it compelling for its application in practice in a wide range of contexts where there is a need to move away from the strictures of traditional innovation thinking.

The challenge, however, is that the debate on types of social innovation may become an intellectual exercise rather than a generative approach in search of workable responses. Working with the generative power of tensions and contradictions is a strategy to develop alternatives and question deeply entrenched assumptions that shape social change. As an initial exploration of the framework, we propose the comparative analysis of two examples of innovation in practice in the context of providing responses to advance just transitions.

4 Harnessing the power of social innovation to advance just transitions

This section presents two cases in which social innovation has been mobilized to respond to the global environmental crisis from a local positioning. The two initiatives have been selected from a database of 800 climate actions in rapidly urbanizing areas compiled by the authors. The database was built through both document analysis of relevant literature, policy documents and government and industrial reports and Internet searches of existing global databases and media coverage. The main aspects of the database, including observations of social innovation, were coded and analyzed. The main criterion for selection was the illustrative potential of the case (Flyvbjerg, 2006). The objective was to select examples that would demonstrate the stated ends and means of social innovation. We searched for 1) cases with explicit sustainability objectives, 2) cases that were considered a success within and beyond the context in which they take place, 3) cases with an identifiable element of social innovation. While there were multiple cases that met these objectives, we specifically chose two cases within a similar context, motivated by the use of local plant resources. The initial information in the database was expanded and triangulated with grey literature and materials on the cases, focusing on the way those actors involved in the project presented it: their stated motivations for developing the innovation, the actors involved, and the structures that support innovation. The analysis focused on developing a narrative of the mobilization of the ends and means of innovation in each case. The double-axis ends-means approach to social innovation was used to illustrate possible temporal trajectories of social innovation, as interpreted by the authors. Those narratives were then compared across the two cases.

Case 1: Basket weaving practice

Ghana is a country that has experienced severe climate change impacts. In 2007, northern Ghana was hit by unprecedented flooding (Olwig & Gough, 2013). Ever since, climate change has become an important issue in local development agendas, giving birth to new political discourses and social practices revolving around climate change (ibid.). Basket weaving is a traditional social practice that has provided localized responses in the context of climate change. The objective is to provide work opportunities for poorer families, particularly those impacted by disasters, mobilizing available resources and skills.

In Ghana, basket weaving from local natural fibers such as straw and grass stems is a traditional skill (Frimpong & Asinyo, 2013). Key techniques of the weaving process include splitting, twisting, untwisting, selection of straw, dyeing, and trimming (Asmah et al., 2016). On average, it takes approximately three days to complete a standard Bolga basket (Ayuure, 2016). It is said that a local man made the first basket by observing the way in which a bird made its nest. This locally developed social innovation has been passed on from generation to generation (Asante, 2009). The baskets, called “Bolga baskets,” are initially produced by indigenous people in Bolgatanga, the capital of the Upper East Region of Ghana. The basket quickly became popular among local people to meet various social needs, such as being used as a sieve in the brewing of a local alcoholic beverage called Pito, during occasions such as funerals, marriage ceremonies, and festivals (Ljunggren, 2007). Initially, both the means and the ends of basket weaving in Ghana are explicitly social. Seen from the means of innovation, although the practice of weaving involves sophisticated techniques, the weaving techniques are imitated by human observation from bird nesting and are deeply embedded in local people’s indigenous knowledge and social practices. We therefore interpret the means of innovation as social instead of technological. Seen from the ends of innovation, the handmade baskets are originally used to meet social needs of daily life. Therefore, the practices of household basket weaving in Ghana can be viewed as a form of pure social innovation.

A local market has been formed with the emergence of various fairtrade networks and local business promotion initiatives (Olwig & Gough, 2013). Seen from the means of innovation, the marketization of basket weaving required more technical inputs such as product design, assembly, pattern making, and quality control (Asmah et al., 2016). The ends of the social innovation are also more economic-oriented. Households sell these baskets in local markets, and they constitute an important source of income for the family. Therein, the basket weaving practice evolves from a pure social innovation to one with more technological and economic elements.

More recently, the social innovation of basket weaving has been further commercialized. The baskets made of traditional techniques are increasingly regarded as a cultural commodity and are getting popular among tourists and in the international market (Olwig & Gough, 2013). In 2017, Ghana exported roughly \$800,000 worth of baskets. Primary global markets for Bolga baskets include Australia, the US, the UK, and New Zealand (Dadzie, 2020). The basket weaving industry in Ghana plays a significant role in job creation, poverty reduction, and sustainability. A whole value chain has been developed, ranging from leather works, cultivation of straw, twistings of the straw, and sack producers, to transport, distribution, and sales (Akapule, 2019). For the basket-weaving practice, new designs, styles, and color patterns are being developed by local artisans. Because household production remains the primary source of supply of baskets, productivity often falls short of meeting the growing demand for export (Dadzie, 2020).

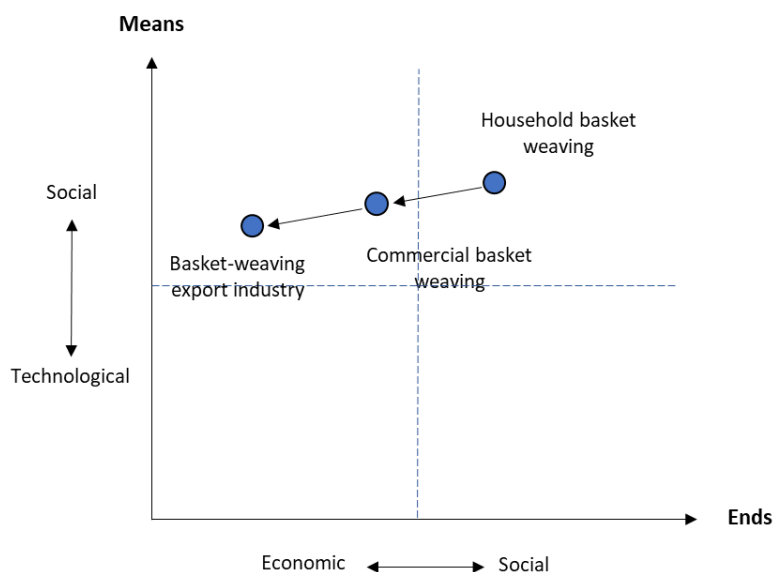


Figure 2. A narrative of the innovation trajectory of basket weaving practice in Ghana

Figure 2 summarises a possible interpretation of the trajectory of the social innovation of basket weaving practice from household basket weaving to commercial and industrialized basket weaving. As shown in Figure 2, originally, basket weaving could be a form of pure social innovation, with social means and social ends. The baskets were initially mainly for domestic use and were gradually commercialized, even in the global market. When the ends of the innovation became more economic-oriented, the means of innovation started to integrate more techniques beyond household practices.

From a justice perspective, the commercialization of basket weaving has offered employment opportunities and eased the economic hardship of local residents, particularly those impacted by natural disasters such as flooding and drought caused by climate change (Olwig & Gough, 2013). Social innovation can also create new political channels and platforms for participation. The fairtrade network for Bolga baskets is one good example. The socio-economic benefits associated with this social innovation become more evident when Ghana's basket weaving industry is integrated into the global market (Ayuure, 2016; Bromley, 2011). The popularization of Bolga baskets is part of a global trend of transition to greener lifestyles, which has enabled redistribution and empowerment. Nevertheless, from a temporal perspective, the scaling up of the social innovation of basket weaving signals an apparent 'capture' of the social innovation by the logic of capitalism. When operating within a capitalist logic, several issues surface. First, the Bolga basket, as a product, might gradually become detached from the original objective of meeting social needs. For instance, Olwig and Gough (2013) found that the traditional Bolga Basket is no longer used by local people in their daily life. Second, the design and production of Bolga Basket also need to be adapted to demands in the export market (Asmah et al., 2016). To increase the competitiveness of the basket industry, standardization and uniformity of pattern for replication outweighs design with rich local specialties (Asmah et al., 2016). This might lead to a subtle process of the stripping of local identity and culture and prevent social innovation. A social innovation may be both emancipatory and repressing depending on the moment in which the practice is observed.

Case 2: Bamboo Bike Initiative

Bernice Dapaah is a Ghanaian entrepreneur in Kumasi, Ghana. In 2009, together with several engineering friends, she founded the Ghana Bamboo Bike Initiative, a social enterprise manufacturing bamboo bicycles (UNFCCC, 2015). The initial idea of making bicycles out of bamboo followed the consideration that bamboo is an abundant crop in Ghana and was available as a raw material for making bicycles. When Dapaah founded her enterprise, bamboo bikes had never been seen in Ghana (Whiting, 2020). Initially, Dapaah's social enterprise created 30 jobs, including 20 bike assemblers and ten farmers (UNFCCC, 2017). Until 2022, the company has sold around 3,000 bicycles, and their monthly production rate has reached about 20 bicycles (TheAfricanLane, 2022). The bamboo bikes they produce provide a sustainable and affordable form of transportation that satisfies local needs. For instance, bamboo bikes may enable children in low-income households to get to school.

With the expansion of business, the initiative is also exploring other market segments and experimenting with new products. For instance, they developed various models based on customer demands, ranging from casual city bikes to mountain bikes and even road bicycles (TheAfricanLane, 2022). Dapaah's team also worked on a bamboo wheelchair design and made a successful prototype. The idea of bamboo wheelchairs might offer a sustainable solution to improve the accessibility and affordability of wheelchairs in Ghana, in addition to the creation of local employment (B&FTOnline, 2017). Bamboo wheelchairs might also build more inclusive conditions for some communities of the disabled. The spillover effects of the initiative are visible. For instance, bamboo bike-making technology has been transferred to other communities, which created more local employment. Dapaah's team aims to scale up the project and build bikes "in Ghana, by Ghanaians, for Ghana" (UNFCCC, 2017).

The Bamboo Bike Initiative can be viewed as a locally developed social innovation that addresses climate change and advances low-carbon transitions. Producing a steel bicycle frame emits about 5 kg of CO₂ (UNFCCC, 2017). Compared to the production of traditional metal bicycles, the manufacturing of bamboo bikes requires less energy and is more environmentally friendly because the bamboo frame is completely recyclable. The cultivation of bamboo helps forest conservation by creating institutions that value and protect the forest and prevent soil erosion (Akwada & Akinlabi, 2018). Bamboo bikes also deliver a sustainable and affordable mode of transport for local people. Dapaah's team has won international awards for their low-carbon practice, including the 2012 UN Habitat/Dubai International Best Practice, UNFCCC Momentum for Change Lighthouse Activity Award 2013, and UN-Habitat/Dubai International Best Practice Award 2014.

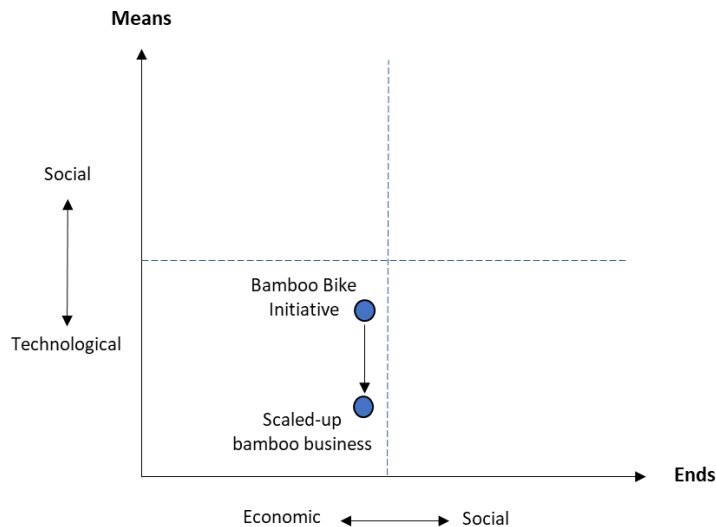


Figure 3. A narrative of the innovation trajectory of the Bamboo Bike Initiative in Ghana

Although Dapaah is running an enterprise that operates under a market logic, it has always been strongly motivated by social objectives. For instance, the initiative aims at promoting low-carbon, affordable transport for local people; for every bamboo plant that is cut down to make a bike, they plant ten more; they also donate bikes to schoolchildren in rural communities, who often have to walk for hours to get to school; and the employers are primarily women and young people. As shown in Figure 3, the case of Bamboo Bike Initiative represents a typical case of social innovation with mixed social ends, in which the use of different materials plays an important role. With the scaling-up of the bamboo business, we observe no significant changes in their visions of the mission of the social enterprise. That is, despite the nature of a social enterprise, Dapaah’s Bamboo Bike Initiative is continuously driven by strong social motivations, in addition to economic ones.

What do these exploratory examples tell us about the role of social innovations in just transitions, as seen through the means and ends framework? The diagrams offer a possible interpretation of trajectories, as narrated in publicly available materials for each initiative, but it is possible to intuit a diversity of trajectories. In both cases, social innovation emerges from the practices in the local context, whether this is reimagining a traditional practice as basket weaving or planning for the mobilization of local materials. Basket weaving may have been more easily adopted within local livelihoods, as the bamboo bikes required training and design. Thus, the resource investment of the actors may vary, and with it, the constitution of social innovation. Basket weaving initially emphasized both social means and ends, whereas the Bamboo Bike initiative had explicit economic aims from the onset and required the development of technological means. In both cases, the social innovation is motivated by the purpose of ‘increasing people’s ownership of the transition’ (Pilsner & Dethier, 2020), but the range of people involved is more restricted in the case of Bamboo bikes. As both innovations achieve reach and impact across contexts, the depth of involvement of actors in making strategic decisions is increasingly constrained: providing employment becomes the key consideration for those social innovations. The journeys demonstrate the two characteristics of social innovation: its plasticity, because social innovations need to be moulded to fit the external conditions in which they happen, and during this process, they may become something else entirely; and their sense of temporal opportunity, as their success depends on establishing when the

innovation emerges. Their contribution to a putatively just transition depends on their capacity to maintain a strong sense of social value and enroll local actors in the innovation process.

5 Conclusion

In the context of massive global changes and important transitions in our environments, economies, societies and infrastructures there is a need to take action in a manner that ensures a wider social benefit. Social innovation offers many promises to respond to the current crises of the Anthropocene, with an increasing number of actors engaging in climate actions of all kinds that harness the power and potential of social innovation. The main mission of this paper is to provide an analytical tool that challenges the static and stereotypical depictions of social innovation and help understand how social innovation takes place on the ground to advance just transitions.

This paper contextualises ideas of innovation with reference to two main schools of thought, an economic perspective on social innovation and a sociological perspective. While the economic school of thought differentiates social innovation from a wider idea of innovation, the sociological school adopts an expansive view of innovation as pertaining to social and cultural change. We find merit in such an expansive school, but also emphasise the need to understand what is distinct in social innovation so that the use of the adjective 'social' is justified. Building upon the two schools of thinking are four dominant interpretations of social innovation, including pure social innovation, innovation for social goods, corporate social innovation and social innovation as new relations and practices. The inherent tensions between these schools of thought prevent the development of an understanding of social innovation as a multi-dimensional, evolving process characterised by its dynamic character, and the extent to which is able to activate broader social change.

The tension between the means and ends of innovation is key to coordinate all interpretations of social innovation. The Ends-Means framework proposed here helps to synthesise and advance current scholarship by looking at social innovation as emerging from within this tension. The contributions of the Ends-Means framework lie in: first, recognising the inherently dynamic and temporal character of social innovation; second, transcending the cliché view of the separation of technological innovation from social innovation which material conditions in practice rarely match; third, situating social innovation in relation to place-based practices of climate action. The analysis of the two cases of social innovation through the Ends-Means framework provides the opportunity to demonstrate the dynamic and temporal character of social innovation in the development of sustainability responses. Opening existing understandings of social innovation and highlighting its malleable, relational character, could serve as an opening to understand the relationship between place-based action and social change, in our quest to advance just transitions.

Reference

- Akapule, S. A. (2019). Ghana: Revamping the Basket Industry for Job Creation and Poverty Reduction in UE - Paku Enterprise Ghana Sets the Pace. *ghanaiantimes*.
<https://allafrica.com/stories/201909240354.html>
- Akwada, D. R., & Akinlabi, E. T. (2018). Bamboo an alternative wood to reducing tropical deforestation in Ghana. DII-2018 Conference On Infrastructure Development And Investment Strategies for Africa,

- Asante, E. A. (2009). A study of selected indigenous Ghanaian women in some indigenous visual Arts. *African Art and Culture. Department of General Art Studies, KNUST*.
- Asmah, A. E., Vyas, S. M., & Koomson, E. (2016). Product Standardization and Functional Diversification of “Bolga” Basketry for Export in Ghana. *ADRRJ Journal (Multidisciplinary)*, 25(12), 15-30.
- Avelino, F., Wittmayer, J. M., Pel, B., Weaver, P., Dumitru, A., Haxeltine, A., Kemp, R., Jørgensen, M. S., Bauler, T., & Ruijsink, S. (2019). Transformative social innovation and (dis) empowerment. *Technological forecasting and social change*, 145, 195-206.
- Ayob, N., Teasdale, S., & Fagan, K. (2016). How social innovation ‘came to be’: Tracing the evolution of a contested concept. *Journal of Social Policy*, 45(4), 635-653.
- Ayuure, B. A. (2016). *Small-scale industries and poverty reduction in rural Ghana: A study of the basket weaving industry in the Bolgatanga Municipality* University of Cape Coast].
- B&FTOnline. (2017). For the physically challenged, bamboo wheelchairs have arrived. <https://thebftonline.com/2017/12/03/for-the-physically-challenged-bamboo-wheelchairs-have-arrived/>
- Baptista, N., Pereira, J., Moreira, A. C., & Matos, N. D. (2019). Exploring the meaning of social innovation: A categorisation scheme based on the level of policy intervention, profit orientation and geographical scale. *Innovation*, 21(3), 379-397.
- BEPA. (2010). *Empowering people, driving change. Social Innovation in the European Union*.
- Borzaga, C., & Bodini, R. (2014). What to make of social innovation? Towards a framework for policy development. *Social Policy and Society*, 13(3), 411-421.
- Bromley, D. (2011). Exports, Employment and Incomes in West Africa. *West Africa Trade Hub technical report*(39).
- Cajaiba-Santana, G. (2014). Social innovation: Moving the field forward. A conceptual framework. *Technological forecasting and social change*, 82, 42-51.
- COP24. (2018). *Solidarity and Just Transition Silesia Declaration*. https://cop24.gov.pl/fileadmin/user_upload/Solidarity_and_Just_Transition_Silesia_Declaration_2_.pdf
- Dadzie, E. A. (2020). Basket weavers in Upper East call for gov’t support to tackle high production cost. *citibusinessnews*. <https://citibusinessnews.com/2020/02/basket-weavers-in-upper-east-call-for-govt-support-to-tackle-high-production-cost/>
- Dawson, P., & Daniel, L. (2010). Understanding social innovation: a provisional framework. *International Journal of Technology Management*, 51(1), 9-21.
- De Tarde, G. (1899). *Social laws: An outline of sociology*. Macmillan.
- De Tarde, G. (1903). *The laws of imitation*. H. Holt.
- Djellal, F., & Gallouj, F. (2014). The laws of imitation and invention: Gabriel Tarde and the evolutionary economics of innovation.
- Domanski, D., Howaldt, J., & Kaletka, C. (2020). A comprehensive concept of social innovation and its implications for the local context—on the growing importance of social innovation ecosystems and infrastructures. *European Planning Studies*, 28(3), 454-474.
- Domanski, D., & Kaletka, C. (2017). Exploring the Research Landscape of Social Innovation. A deliverable of the project *Social Innovation Community (SIC)*. Dortmund, Germany: *Sozialforschungsstelle*. Search in.
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, 12(2), 219-245.
- Franz, H.-W., Hochgerner, J., & Howaldt, J. (2012). Challenge social innovation: An introduction. In *Challenge social innovation* (pp. 1-16). Springer.
- Frimpong, C., & Asinyo, B. K. (2013). A comparative study of history, equipment, materials, techniques and marketing approach of traditional weaving in Ghana. *Arts and Design Studies*, 7(1), 1-8.
- Godin, B. (2015). *Innovation contested: The idea of innovation over the centuries*. Routledge.

- Haxeltine, A., Avelino, F., Pel, B., Dumitru, A., Kemp, R., Longhurst, N., Chilvers, J., & Wittmayer, J. M. (2016). A framework for transformative social innovation. *TRANSIT working paper*, 5, 2-1.
- Hiteva, R., & Sovacool, B. (2017). Harnessing social innovation for energy justice: A business model perspective. *Energy Policy*, 107, 631-639.
- Hoggan, F. (1909). The American negro and race blending. *The Sociological Review*, 2(4), 349-360.
- Howaldt, J., & Schwarz, M. (2010). *Social Innovation: Concepts, research fields and international trends*. Sozialforschungsstelle Dortmund.
- ILO. (2015). Guidelines for a just transition towards environmentally sustainable economies and societies for all. In: International Labour Organization Geneva.
- Kinnunen, J. (1996). Gabriel Tarde as a founding father of innovation diffusion research. *Acta sociologica*, 39(4), 431-442.
- Leadbeater, C. (2007). Social enterprise and social innovation: Strategies for the next ten years. A *social enterprise think piece for the Cabinet Office of the Third Sector*.
- Ljunggren, I. (2007). Weaving a Way Out of Poverty?: Basket Weaving as Poverty Reduction Strategy among Rural Female Poor in Bolgatanga, Northern Ghana. *International Development Studies, Roskilde University Centre*.
- Manzini, E. (2012). Design research for sustainable social innovation. In *Design research now* (pp. 233-245). Birkhäuser.
- Marcy, R. T., & Mumford, M. D. (2007). Social innovation: Enhancing creative performance through causal analysis. *Creativity Research Journal*, 19(2-3), 123-140.
- Morelli, N. (2007). Social Innovation and New Industrial Contexts: Can Designers' Industrialize" Socially Responsible Solutions? *Design issues*, 23(4), 3-21.
- Moulaert, F., MacCallum, D., & Hillier, J. (2013). Social innovation: intuition, precept, concept. *The international handbook on social innovation: Collective action, social learning and transdisciplinary research*, 13, 13-23.
- Mulgan, G., Tucker, S., Ali, R., & Sanders, B. (2007). Social Innovation: what it is, why it matters, how it can be accelerated.
- Olwig, M. F., & Gough, K. V. (2013). Basket weaving and social weaving: Young Ghanaian artisans' mobilization of resources through mobility in times of climate change. *Geoforum*, 45, 168-177.
- Pel, B., Haxeltine, A., Avelino, F., Dumitru, A., Kemp, R., Bauler, T., Kunze, I., Dorland, J., Wittmayer, J., & Jørgensen, M. S. (2020). Towards a theory of transformative social innovation: A relational framework and 12 propositions. *Research policy*, 49(8), 104080.
- Phills, J. A., Deiglmeier, K., & Miller, D. T. (2008). Rediscovering social innovation. *Stanford Social Innovation Review*, 6(4), 34-43.
- Pol, E., & Ville, S. (2009). Social innovation: Buzz word or enduring term? *The Journal of socio-economics*, 38(6), 878-885.
- Pot, F., & Vaas, F. (2008). Social innovation, the new challenge for Europe. *International Journal of Productivity and Performance Management*.
- Regalia, I. (2006). *Regulating new forms of employment: local experiments and social innovation in Europe*. Routledge.
- Rüede, D., & Lurtz, K. (2012). Mapping the various meanings of social innovation: Towards a differentiated understanding of an emerging concept. *EBS business school research paper*(12-03).
- Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy*. Routledge.
- Tabares, S. (2020). Insights from corporate social innovation: a research agenda. *Social Enterprise Journal*.
- TheAfricanLane. (2022). Meet Ghanaian Entrepreneur Bernice Dapaah who is Transforming Lives by Making bicycle out of Bamboo. *The African Lane Magazine*.
<https://theafricanlane.com/2022/06/21/meet-ghanaian-entrepreneur-bernice-dapaah-who-is-transforming-lives-by-making-bicycle-out-of-bamboo/>

- UNFCCC. (2015). In *Building Bamboo Bikes in Ghana*. <https://cop23.unfccc.int/news/listen-building-bamboo-bikes-in-ghana>
- UNFCCC. (2017). The Bamboo Bikes | Ghana. <https://unfccc.int/climate-action/momentum-for-change/women-for-results/ghana-bamboo-bikes-initiative>
- Van der Have, R. P., & Rubalcaba, L. (2016). Social innovation research: An emerging area of innovation studies? *Research policy*, 45(9), 1923-1935.
- Whiting, K. (2020). Meet the woman making cycling even more sustainable in Ghana. <https://www.weforum.org/agenda/2020/07/ghana-bamboo-bike-cycling-sustainability/>
- Wittmayer, J. M., de Geus, T., Pel, B., Avelino, F., Hielscher, S., Hoppe, T., Mühlemeier, S., Stasik, A., Oxenaar, S., & Rogge, K. S. (2020). Beyond instrumentalism: Broadening the understanding of social innovation in socio-technical energy systems. *Energy Research & Social Science*, 70, 101689.