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UNDERSTANDING SUSTAINABILITY INNOVATIONS THROUGH POSITIVE ETHICAL NETWORKS

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ABSTRACT

In this paper, a positive organizational ethics (POE) based framework is informed by the microfinance and socially responsible investing movements to capture the process of sustainable financial innovations. Both of these movements are uniquely characterized by the formation of positive ethical networks (PENs) to develop sustainability innovations in response to external crises. The crisis-PEN-innovation framework proposed makes four contributions to the POE literature: 1) positions corporate sustainability through a POE lens; 2) formalizes the PEN construction through POE theory; 3) proposes PENs are mobilized to respond to external crises; and 4) demonstrates how PENs facilitate sustainability innovations. The theoretical framework is tested using theory-guided process tracing in the sustainable banking sector using to understand how sustainability innovations were realized. The findings are consistent with the crisis-PEN-innovation framework proposed.

KEYWORDS: sustainability innovation, positive organizational ethics, positive ethical network, corporate sustainability, sustainable banking

ABBREVIATIONS USED

CSR: Corporate social responsibility

MF: Microfinance

PEN: Positive ethical network

POE: Positive organizational ethics

POS: Positive organizational scholarship

SRI: Socially responsible investing

TGPT: Theory-guided process tracing

INTRODUCTION

The impact of financial innovations in contributing to the global financial crisis of 2008 has raised discussion in the economics literature and the broader public (Crotty, 2009; Obstfeld et al., 2009). Receiving less attention are sustainable financial innovations, or financial innovations that “meet the needs and aspirations of the present without compromising the ability to meet those of the future” (Brundtland & W.C.E.Dt, 1987). What are the enabling conditions for sustainable financial innovations? Specifically, what are the triggers for a sustainability innovation in the financial sector and who are the actors that coordinate it? This is the question that motivates this paper and around which a body of research for better understanding sustainability innovations has emerged. Various theoretical frameworks including strategic niche management (Kemp et al., 1998; Schot & Geels, 2008; Verbong et al., 2008) and technology innovation systems (Bergek et al., 2008; Hillman et al., 2008) contribute to the discourse centered on these questions but the relevance of sustainability within these frameworks is unclear. The field of positive organizational ethics (POE), which focuses on the development and impact

of “positive” traits in an organization, offers a new frame with which to extend established innovation theories and develop a novel theoretical framework for sustainability innovation. If sustainability is indeed a positive ethical ideal, as is argued in the literature review section, then a better understanding of financial innovations towards sustainability requires a POE lens. Through a POE lens, the process for achieving sustainable financial innovations, such as microfinance (MF) and socially responsible investing (SRI), can be accurately depicted as the formation of positive ethical networks (PENs) in response to crises.

The long history of the MF and SRI movements informs the theoretical framework developed in this paper. Examples in MF are manifold. The formation of microcredit institutions throughout Europe occurred in direct response to poverty crises. The microcredit funds of Ireland emerged in the 1720s in response to extreme poverty and the lack of banking services to the poor who often needed loans to offset a bad harvest or illness (Hollis & Sweetman, 1998; Seibel, 2003). *Raiffeisenbanken* and *Volksbanken* in Germany originated as savings and credit cooperatives to serve the poor in rural and urban areas, respectively, after the hunger year of 1846-1847 (Raiffeisen, 1866; Seibel, 2003). In each of these cases, a variety of actors collaborated as a network to develop innovative financial products to serve the poor. The majority of actors within these networks were not directly afflicted by the crises but rather, were motivated around and united through a positive approach to improve the conditions of those who were.

A similar phenomenon can be identified in the SRI movement, which has ties to various religious jurisprudences including Judaism and Islam but more formally began in the mid-1700s with the Quakers and Methodists (Schueth, 2003). Consistent with the innovation patterns in the MF movement, innovations in SRI were also triggered by crises. The rise of the slave-trade in the 1700s led Quakers and Methodists to develop the first negative-screening criteria in investments by refusing to invest in slave-trade enabled products and war-related activities (Hutton et al., 1998; Kinder et al., 1993; Schueth, 2003). The modern SRI movement has

been traced to the political crises of the 1960s including the anti-Vietnam war protests and civil rights movement— particularly the race riots that ensued after the assassination of Martin Luther King, Jr. (Hutton et al., 1998; Schueth, 2003). This movement was further shaped and formalized in the late 1980s with an innovative financial response by churches, universities, and community groups to the Apartheid movement in South Africa (Guay et al., 2004; Schueth, 2003).

As briefly demonstrated in each of the developments behind MF and SRI, crises created opportunities for positive change around which actors collaborated in PENs to innovate. This pattern yields the research question, *what are the triggers for sustainable financial innovations and who are the actors that coordinate it?* Based on a generalization of the MF and SRI movements, the underlying hypothesis of this study and the framework put forth is that PENs, although being established and existing organically, are mobilized to develop sustainable financial innovations in response to external crises. The centerpiece of this framework is the PEN, which is theoretically constructed by expanding upon the amplifying effect documented in positive organizational scholarship (POS) theory and social network literature. After grounding the concept of a PEN in the literature, the pivotal role of an external crisis in mobilizing and strengthening PENs is explored; triggering them to cultivate and facilitate innovation to address the crisis.

Before developing the “crisis-PEN-innovation” framework, we make the case for using a positive ethics lens to understand sustainable financial innovations. We then test the framework, utilizing theory-guided process tracing (TGPT), through a 12-month research engagement with Triodos Bank— a pioneer in the sustainable banking sector and contributor towards five sustainable financial innovations we identify. The results from this study confirm the framework we put forth in this paper. We conclude with a summary of our contributions from this research along with proposals for further research to better understand sustainability innovation.

LITERATURE REVIEW

This study is concerned with the conditions under which sustainable financial innovations occur. The literature on sustainable innovations, which primarily focuses on the sustainability of the process itself, is first summarized. We then explore the theoretical evolution of sustainability, and specifically corporate sustainability due to the organizational level of analysis we employ when assessing the actors of PENs. After demonstrating that corporate sustainability is a values-based ideal that requires a positive approach, we reframe corporate sustainability through the POE literature and distinguish it from corporate social responsibility (CSR).

Sustainable Process for Innovation

The current research that relates sustainability to innovation focuses primarily on the sustainability of the innovation process, attempting to understand the dynamics of the “sustainability innovation journey” (F. W. Geels et al., 2008) rather than concentrate on how to promote sustainability innovations. Nonetheless, the theories developed by researchers from this space and the variety of lenses they use contribute greatly in supporting the efficacy of PENs in the proposed framework as being the mediums through which sustainability innovations occur. We adopt Thompson’s (1965) commonly accepted definition of innovation and incorporate it with the commonly accepted definition of sustainability (explored further below) to define sustainability innovations as “the generation, acceptance and implementation of new ideas, processes, products or services” (Thompson, 1965) “that [meet] the needs and aspirations of the present without compromising the ability to meet those of the future” (Brundtland & W.C.E.Dt, 1987).

Two prominent lenses used to evaluate the sustainability of innovation processes are strategic niche management and technology innovation systems. The strategic niche

management approach suggests that innovations are incubated in niche market segments that connect users, producers, and stakeholders to collaborate and develop an innovation before they are at a stage ready for release (Schot & Geels, 2008; Verbong et al., 2008). These innovations need protection, hence a niche, and a strong community of entrepreneurs and stakeholders to develop the innovation (F. Geels & Raven, 2006; Kemp et al., 1998). The technology innovation systems approach focuses more on this latter point by assessing the set of actors, networks, and institutions around which innovations spread (Hillman et al., 2008). In this literature, authors note the presence of virtuous cycles whereby innovations gain legitimacy through positive externalities and feedback loops (Bergek et al., 2008; Hillman et al., 2008). This is driven further by authors utilizing socio-political lenses who argue that the active participation and collaboration among relevant stakeholders is necessary for innovation (Agterbosch & Breukers, 2008; Araujo et al., 2009). One strategy for achieving this collaboration is through discourse and the strategic framing of sustainability innovations to engage a larger group of actors (Lovell, 2008). An entrepreneurship lens also supports the importance of creating a strong network around an innovation (Larson, 2000). The public entrepreneurship network is an impressive framework developed by Laws et al. (2001) that combines an entrepreneurial lens with a socio-political lens to describe the process for developing innovations, emphasizing the role of government.

Corporate Sustainability Overview

While sustainability ideals can be traced to various religious texts and teachings (Dudley, 1996; Gottlieb, 1996; Matthiessen, 1984; Mbiti, 1996; Mebratu, 1998), the modern sustainability movement is demonstrated by Kidd (1992) to have derived from six different roots: the carrying capacity root, the resource root, the biosphere root, the critique of technology root, the “no growth” or “slow growth” root, and lastly the eco-development root. Due to the similarity between the first two movements Kidd (1992) identifies (i.e. the carrying capacity root and the resource

root) and the normative emphasis of the latter four (i.e. the biosphere root, the technology root, the “no growth” root, and the eco-development root), for purposes of simplicity, it can be argued that there are two major branches from which the modern construction of sustainability is derived.

The carrying capacity approach has arguably been the most dominant in evolving the traditional concepts of sustainability, beginning with Malthus’ (1798) *Essay on the Principle of Population*, which stresses the limits to growth caused by resource scarcity (Kidd, 1992; Mebratu, 1998). In the early 1900s, however, normative claims began to be linked to scientific pre-conceptions of sustainability. Perhaps the first normative stance was made by Shaler in 1905 when he emphasized the moral obligations of each generation to future generations (Shaler, 1905). This ethical obligation is captured by Sachs, who advocates for a variety of social, economic, and environmental goals all grounded in the “central idea that values are an inherent element of sustainability” (Kidd, 1992). Consequently, the Brundtland Commission adapted Sachs’ (1978) definition for ecocodevelopment (“an approach to development aimed at harmonizing social and economic objectives with ecologically sound management, in a spirit of solidarity with future generations”) to define sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland & W.C.E.Dt, 1987). This comprehensive, values-based approach extends beyond the environmental focus of early conceptions into the socioeconomic domain (Kidd, 1992; Mebratu, 1998). Most definitions for sustainability are also catered around this definition. Through a historical analysis, Bell and Morse (2008) clarify the relationship between the two terms by identifying sustainability as both a descriptor and target for sustainable development.

Although sustainability innovations occur at the systems level, the PEN construction in this paper is based upon an organizational level of analysis on the actors that make up the network. Therefore, this research is specifically concerned with the field of corporate sustainability, which applies sustainability to the firm or

organization. There is no agreed upon definition for corporate sustainability. One potential definition is offered by Dyllick and Hockerts (2002: 131), who apply the definition of sustainability referenced earlier to a stakeholder conceptualization of the firm: “meeting the needs of a firm’s direct and indirect stakeholders without compromising its ability to meet the needs of future stakeholders.” Although corporate sustainability is often times interchanged or confused with CSR (Montiel, 2008), the two constructs need to be distinguished, particularly from a POE standpoint.

CSR stems from a different literary trajectory than does corporate sustainability and is present in foundational works of management theory including Chester Barnard’s (1938) *The Functions of the Executive*. Although there is no definition for CSR, Carroll describes a CSR firm as one that “should strive to make a profit, obey the law, be ethical, and be a good corporate citizen” (Carroll, 1991, p.43) (for literature review on CSR, see Carroll (1999)). Due to its strong moral emphasis and common origins in the management literature, CSR literature is parallel to and often interchangeable with the field of business ethics (Joyner & Payne, 2002; Carroll, 1999) (for literature review on business ethics, see Tsalikis and Fritzsche (1989)). Dating back to the early 1900s, both fields resurged in the 1970s in response to increasing stakeholder demands for “transparency, accountability, and responsibility” (Caza et al., 2004, p.171) due to the many illegal and unethical infractions committed by businesses (Wood, 1991; Bartel, 2001; Turban & Greening, 1997; Mitchell, 2001). These infringements led to a surge in the business ethics and CSR disciplines as researchers began to study causes, behavior, and outcomes of unethical behavior. As a result, CSR focuses primarily on satisfying legal regulations, reducing harm, and meeting the societal expectations of a “good citizen” (Carroll, 1991, 1999; Caza et al., 2004; Nijhof et al., 2003; Salzmann et al., 2005; Sebhatu, 2009; Morse et al., 2001; Simons et al., 2001; Hubbard, 2009; Payne & Raiborn, 2001). This focus is indicative of a deficit approach, however, and not consistent with the conceptualization of sustainability as an ever-moving target and

values-driven ideal (Bell & Morse, 2008; Kidd, 1992; Sachs, 1978; Shaler, 1905; Goldsmith et al., 1972; Brundtland & W.C.E.Dt, 1987; Mebratu, 1998). Instead, sustainability, and corporate sustainability in particular, needs to be captured through a positive approach. A POE lens is therefore ideal for conceptualizing sustainability for its application of POS theory to the field of business ethics.

Corporate Sustainability through Positive Organizational Ethics

The positive approach of POE, which applies POS theory to business ethics and broader management literatures (Verbos et al., 2007), is the most appropriate lens through which to capture corporate sustainability. POS is grounded in positive psychology theory and applies it to study the positive behavior and outcomes of organizations (K. S. Cameron et al., 2003; Verbos et al., 2007). As a “science of positive subject experience, positive individual traits, and positive institutions,” (Seligman & Csikszentmihalyi, 2000) positive psychology draws upon well-grounded theory from the social and behavioral sciences to study not what makes humanity endure or survive, but rather what enables it to thrive (Seligman, 1998; Baumgardner & Crothers, 2009). Therefore, at the core of positive psychology and POS literature is a positive, or an abundance approach. Whereas a deficit approach is characterized by identifying problems and generating solutions (i.e. problem-solving and filling deficits), an abundance approach starts by identifying the highest potential and understanding enablers of such potential (Linley et al., 2010; K. S. Cameron et al., 2003). Applying positive psychology to the organizational unit of analysis, POS aims to better understand what causes organizations and their members to strive towards such descriptors as “excellence, thriving, flourishing, abundance, resilience, [and] virtuousness” (K. S. Cameron et al., 2003).

The field of POE bridges POS, business ethics literature, and management literature to understand the behavior, dynamics, causes, and impacts of a positive ethical organization, or one that aims to not merely reduce harm but to improve

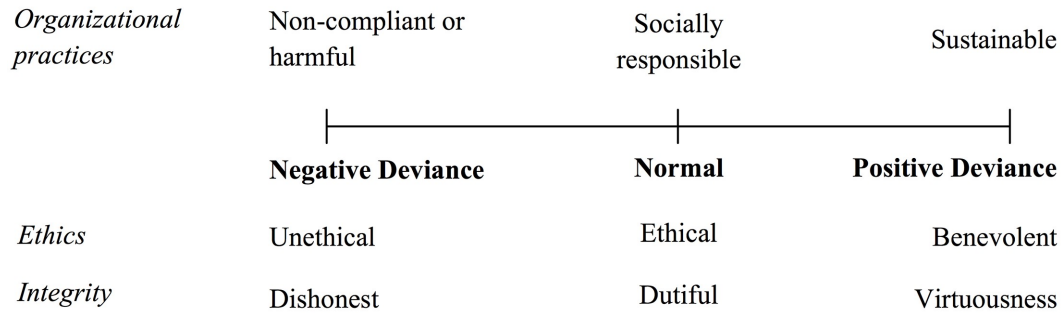


Figure 1: Corporate sustainability and corporate social responsibility can be distinguished on a positive deviance continuum

society (Verbos et al., 2007; Caza et al., 2004). Through a positive deviance continuum, illustrated in Figure 1, a positive ethical organization can be equated with a sustainable one, positioned as being positively different from the ethical norm (K. S. Cameron, 2003; Caza et al., 2004; Spreitzer & Sonenshein, 2003, 2004; Verbos et al., 2007). A POE lens therefore affords corporate sustainability to be distinguished from CSR and business ethics, which Caza et al. (2004) state “typically involve the imposition of specific standards of moral corporate behavior and a cohesive set of rules for appropriate action” (Ferrell & Gresham, 1985; Hunt & Vitell, 1986; Swanson, 1995). Moreover, while CSR is in the domain of ethics and focuses on reducing harm, corporate sustainability is a positive ethical ideal attributed to “benevolent” organizations that aim to improve society. The use of the term “positive ethical” in this paper refers to the positive deviance from the ethical norm, as adapted from the theoretical construction of positive ethical organizations (Verbos et al., 2007) and the positive deviance continuum (K. S. Cameron, 2003; Caza et al., 2004; Spreitzer & Sonenshein, 2003, 2004). While many definitions for ethics exist, they generally resemble Raiborn and Payne’s (1990) definition: “a system of value principles or practices and a definition of right and wrong” (Joyner & Payne, 2002; Tsalikis & Fritzsche, 1989).

By moving beyond the minimum standards of CSR and towards the sustainability ideals of attaining the best possible outcomes for society, the positive deviance continuum provides much needed structure to the literature that frames CSR and

corporate sustainability through a hierarchical relationship (Van Marrewijk, 2003; Kaptein & Wempe, 2002). Furthermore, in the approaches espoused by the Erasmus University's Business Society Management and Lassi Linnanen and Virgilio Panapanan from the Helsinki University of Technology, CSR is perceived as an intermediate step towards corporate sustainability, or "the ultimate goal; meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Van Marrewijk, 2003, p.101). The POE literature therefore highlights sustainability through a positive approach, returning the focus to how organizations can attain optimal ideals as opposed to fixing problems as they appear and "getting by." Most importantly, however, through its positioning of a sustainable organization as being positively deviant from the norm, a POE lens contextualizes corporate sustainability, enabling it to mean different things in different contexts.

FRAMEWORK DEVELOPMENT

Despite the variety of lenses used by authors in studying how to make the process for innovation more sustainable, there are very few studies that assess how sustainability innovations are developed. We propose a POE-based framework effectively captures the process of sustainable financial innovations. Specifically, we argue that a PEN serves as the coordinating mechanism through which sustainable financial innovations are developed in response to a crisis. The theoretical underpinning of this framework is divided into the following three parts: 1) the development of PENS through the amplifying effect and Appreciative Inquiry theory; 2) the role of crises in triggering PEN formation; and 3) the capacity of PENS for sustainable financial innovation in response to crises. The final framework is illustrated at the end of this section.

Development of PENs through the Amplifying Effect and Appreciative Inquiry

To date, much of the POS and POE literatures have focused on the individual, interpersonal, and organizational levels for units of analyses as opposed to the systems level. At the individual level, authors demonstrate the traits associated with positive individual ethics such as physical and mental health, high levels of positive energy, excellence, wisdom, creativity, humility, trustworthiness, and resilience (K. S. Cameron et al., 2003; Caza et al., 2004; Fredrickson, 2000; Park & Peterson, 2003; Ryff & Singer, 1998; Seligman & Csikszentmihalyi, 2000; Weiner, 1993). These traits then impact the interpersonal level, building strong, lasting relationships characterized by compassion, respect, loyalty, and honesty (K. S. Cameron, 2003; Caza et al., 2004; Haidt, 2000). The field of POS emerges through the same mechanism, known as the amplifying effect, when interpersonal positive ethics cause an organization to foster and exemplify positive ethical qualities such as virtuous, purpose-driven, appreciative, equitable, benevolent, and dignified (Bolino et al., 2002; K. S. Cameron, 2003; Caza et al., 2004; Frederickson, 2003; Gittell, 2003a; Park & Peterson, 2003). Although grounded in POS literature, notions of the amplifying effect have also been discussed in the organizational citizenship behavior literature (see Podsakoff et al. (2000) for full review) where authors discuss the impacts of positive individual behavior on organizational behavior and performance (George, 1995; Koys, 2001; Walz & Niehoff, 2000). In this section, we argue that positive ethical actors, who are aligned in a network around shared values and common goals, cause the network to become a positive ethical one through the amplifying affect in a similar manner as at the organizational level.

Cameron (2003) and Caza et al. (2004) describe the amplifying affect as the phenomenon of positive individual ethics spreading throughout an organization, leading to a positive ethical organization. In such an organization, people are inspired by positive ethical behavior when they observe and encounter it (Bolino et

al., 2002; Caza et al., 2004; Sandage & Hill, 2001). Haidt (2000) addresses this phenomenon as “elevation,” which occurs when people who witness human moral beauty or virtue are motivated to exemplify the same characteristics. Other authors agree with the intrinsic self-motivation or inclination to follow moral behavior when it is observed (K. S. Cameron et al., 2003; Cialdini, 2001). This contagious nature of positive ethical behavior leads to a positive upward spiral (Frederickson, 2003), spreading throughout an organization before eventually becoming part of the organization’s culture (K. Cameron & Caza, 2002). Also interesting is the mutually-reinforcing aspect of this process— while individual ethics impact organizational ethics, the reverse is also true: positive organizational ethics influence individual ethics (Bagozzi, 2003).

The amplifying process of positive ethical behavior, and its mutual-reinforcement, is not confined to the bounds of an organization and can instead occur in any network as evidenced by social network theory.¹ Referred to as informal social control in the social network and psychology literatures, socialization mechanisms cause members of a network to be influenced by and to conform to the behavior and values dictated by the social norm, despite their own predispositions and beliefs (Brass et al., 1998; Erickson, 1988; Lindzey & Aronson, 1968; Zey-Ferrell et al., 1979; Zey-Ferrell & Ferrell, 1982). Social norms can be both, informal and ethically-founded, making them highly pertinent in PENs (Lindzey & Aronson, 1968; Phillips, 2010). The Appreciative Inquiry framework characterizes the process in which a social norm can be intentionally established in networks with positive ethical actors who share values and collaborate towards a common goal (Cooperrider & Whitney, 2005).

Appreciative Inquiry is a four-stage process that activates the amplifying effect within an organization to create positive change by: 1) discovery of positive ethical behavior within an organization; 2) dream of an opportunity for positive change based on shared values; 3) design of a solution for desired state to be realized; and

¹While organizations can be argued to be networks, the reverse is not always true— primarily from a structural perspective.

4) delivery or destiny of the vision (Cooperrider & Sekerka, 2003). The first two stages of this framework inform the PEN theoretical construction that in order for a network to be considered a PEN, it must consist of positive ethical actors who share a common vision. A PEN can thus be formally defined as: a purpose-driven network of positive ethical actors aligned under a shared set of values and goals; where an actor can be any individual or group of individuals who may or may not represent an organization, institution, or smaller PEN. As the next section delineates, external crises serve as trigger mechanisms for PENs to form and mobilize around an opportunity for positive change (stages one and two of the Appreciative Inquiry process) while the third section of the framework discussion explores the innovative capacity within PENs (stages three and four).

External Crises Trigger PEN Formation

While the definition of a crisis depends on the context in which it is used, for the purposes of this paper, a crisis is defined as an event or process of critical instability in a system (Barton, 1969; Jaques, 2009). The current research in POS concerned with crises focuses on internal crises and the “buffering” effect (K. S. Cameron, 2003) or resilience (L. Sekerka et al., 2011; Sutcliffe & Vogus, 2003) that positive behavior affords. However, this study is concerned with external crises and the effect they have on PEN formation and mobilization as well as on the capacity of a PEN to address societal challenges through sustainable financial innovations. The notion of positive ethics as a state of virtuousness (K. S. Cameron, 2003; Caza et al., 2004) provides insight on how positive ethical actors may respond to external crises. Moreover, virtuousness fosters “prosocial” behavior, or individual behavior that is directed toward benefiting other people not due to reciprocity but out of self-motivation (Batson, 1991, 1994; Berkowitz, 1972; K. S. Cameron, 2003). External crises are therefore perceived as opportunities for positive change by positive ethical actors exhibiting and acting upon prosocial behavior.

Some authors expand upon the dynamics of crises motivating positive ethical responses by focusing on transcendent behavior, which Bateman and Porath (2003: 122) define as “self-determined behavior that overrides constraining personal or environmental factors and effects extraordinary (positive) change.” Consistent with the discussion on prosocial behavior, transcendent behavior is a positive ethical trait also argued to be stimulated through crises and based upon intrinsic motivation and virtues (Bateman & Porath, 2003; Hackman & Oldham, 1976; Ryan & Deci, 2000).

As discussed in the literature, external crises evoke prosocial and transcendent behavior from positive ethical actors. Due to the focus of this research on sustainability innovations, the primary external crises of interest for triggering PENs are those that affect the sustainability of society: social, economic, and environmental crises. The economic crises throughout Europe that triggered the microcredit movement and social crises that fueled the SRI movement revealed the heightened suffering of others and therefore served as calls-to-action for virtuous individuals and organizations. In each of the historical examples cited in the introduction, actors aiming to respond to a crisis needed to collaborate with other actors who shared similar values and goals. This response of forming a purpose-driven network can be in large part due to the severity of the crisis and, consequently, the complexity of the solution required. We therefore argue that PENs form in direct response to external crises and mobilize under a common set of virtuous goals; transforming external crises into opportunities for positive change.

Sustainability innovation through PEN Coordination

There are many facets of positive ethics that afford an individual and organization with a capacity to innovate. Based on our theoretical formulation of PENs in addition to our review of the innovation literature and POS theory, we argue that PENs have an even greater capacity to innovate. Arnaud and Sekerka (2010) make a valuable contribution to the theoretical framework proposed by arguing that

innovation for sustainability in an organization requires a positive ethical climate. Researchers attribute the role of positive ethics in cultivating this climate to two factors: heightened intellectual aptitude and improved coordination mechanisms.

Many authors discuss the new knowledge creation and flexible thinking that can be attributed to positive ethical behavior (Amabile et al., 1996; Hackman, 1992; Lee et al., 2003; L. Sekerka et al., 2011). Frederickson (1998, 2000, 2003) explains the psychological mechanics behind this association through the broaden-and-build theory she develops; demonstrating that positive attitudes broaden thought and thereby build the intellectual resources that an individual can summon to use.

Beyond increasing intellectual abilities, positive ethical behavior in a PEN facilitates the process of innovation through relational coordination (Gittell, 2003b,c).

Relational coordination theory argues that the “coordination of highly interdependent work is most effectively carried out through high-quality communications and relationships, particularly through relationships of shared goals, shared knowledge, and mutual respect” (Gittell, 2003c). The focus of coordination through interdependence and shared goals supports the theoretical construction of a PEN (Saavedra et al., 1993; L. E. Sekerka & Stimmel, 2011; Wageman, 1995). On stressing the importance of relational coordination, Gittell reconceptualizes organization design theory, which has traditionally focused on mechanistic coordination, through a POS lens that emphasizes high-quality relationships and shared goals (Lawrence et al., 1967; Gittell, 2003c).

The innovation frameworks and theories mentioned earlier further support the critical role of a PEN in the framework proposed. As described in the literature review, the strategic niche management, technology innovation systems, and public entrepreneurship frameworks all stress the importance of a strong collaborative network to incubate and spread innovations (Bergek et al., 2008; Hillman et al., 2008; Kemp et al., 1998; Laws et al., 2001; Schot & Geels, 2008; Verbong et al., 2008). It is for this reason that PENs extend beyond an individual or organization

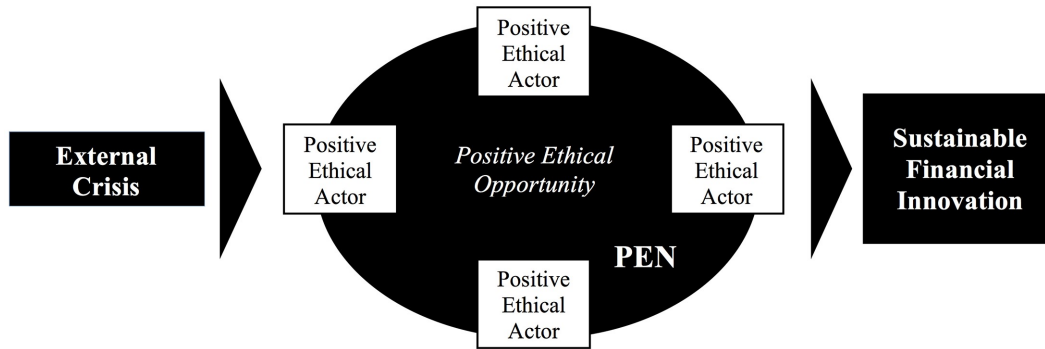


Figure 2: Crisis-PEN-Innovation framework. Positive ethical actors with shared values and goals form a PEN in response to a crisis, which they view as a positive ethical opportunity for sustainable financial innovation.

and instead require collaboration among a diverse set of positive ethical actors. Discourse framing theory and authentic leadership development both defend the purpose-driven nature of PENs and the shared values within them by stressing the importance of shared goals and relationships as coordinating mechanisms within innovation networks (Lovell, 2008; Luthans & Avolio, 2003). These frameworks and theories thus support the claim that PENs are ideally positioned for sustainability innovation.

Proposed Framework

Figure 2 shows the complete framework that has been theoretically positioned and developed in this section.

METHODOLOGY

The proposed framework can be tested through theory-guided process-tracing (TGPT). TGPT is concerned with “seek[ing] to account for outcomes by identifying and exploring the mechanisms that generate them” (Bates et al., 1998, p.12).

Moreover, in TGPT, researchers start with outcomes of interest and work

backwards to understand causal links that contributed towards them. As defended below, Triodos Bank, a pioneer in sustainable banking, is an ideal case to study through a TGPT approach.

Our in-depth case study of Triodos Bank covers its 41 years of operation in order to better understand how sustainable financial innovations are fostered. The study consists of 29 semi-structured interviews— 23 with Triodos employees and 6 with relevant stakeholders external to Triodos Bank. Interviews were conducted across all four international branches (Belgium, Spain, the UK, and the Netherlands), including four members of upper management: the CEO, the CFO, and two directors who report directly to the CEO. The remaining employees, or “co-workers” according to Triodos’ terminology, were selected from lower levels of the organization. The stakeholders who were interviewed consisted of business clients and community members. 5 of the 29 people interviewed were female and 2 of the 29 people were under the age of 35. While this demographic may appear skewed, we applied an intentional screen to interview members of Triodos’ stakeholder network who had first-hand knowledge of the sustainability innovations Triodos was involved with (the first of which dates back to 1972).

Interviews lasted between 40 and 90 minutes and consisted of three parts: the role, background, and responsibility of the interviewee; the history and current situation of the bank; and the contribution of the bank towards the sustainable development of the financial sector. In addition to the interviews, we conducted participatory observations and focus group discussions. We then transcribed, coded, and analyzed all interviews, observations, and discussions. Based upon their frequency and depth by which they were discussed, we identified five sustainable financial innovations as significant from the coded data.

Sustainable Banking: the Case of Triodos Bank

Due to their pivotal role as intermediaries in the economic system, financial institutions have a significant impact on society. In light of the current problems that stemmed from the financial sector and the dramatic effects it has caused around the world, it is particularly interesting to understand the conditions under which sustainable financial innovations occur in this space to avert or mitigate future crises.

To paraphrase the opening line of Weber and Remer (2011): there is no single definition of sustainable banking. Bouma et al. (2001) attribute this to the ever-evolving nature of the sustainable banking field. Although not formally defined, sustainable banks can be described as “value-driven banks” that “prioritize people before profits” as remarked by Peter Blom, the CEO of Triodos Bank. Social enterprises, including for-profit and non-profit alike, forego decisions to maximize profits in lieu of more socially favorable ones and are often financed by sustainable banks. Promoting a more sustainable society is thus the core mission and purpose of a sustainable bank— their *raison d’être*.

Differentiating Triodos Bank from numerous other sustainable financial institutions is its widely-recognized distinction as a pioneer in the sector, driven by ethical objectives to innovate. Founded in 1972 in the Netherlands, Triodos Bank operates in four European countries today: Spain, the United Kingdom, Belgium and Germany; with a total balance sheet in 2010 of 4.8-billion USD, a net profit of 15.5-million USD, and an average growth rate of 30-35%. Through its positive ethical attitudes and action, Triodos is the epitome of a positive ethical organization and a collaborator in many PENS. Triodos Bank is consistent with the positive ethical organization construction put forth by Verbos et al. (2007) in that it embraces the *living code of ethics*, or “the cognitive, affective, and behavioral manifestation of an ethical organizational identity” (Verbos et al., 2007, p.22). Moreover, the value-driven or sustainable DNA of Triodos Bank not only

Date	Sustainable Financial Innovation	Description
1972	Formation of Triodos Bank: a fully transparent bank that only finances sustainable projects	100% of the loan portfolio is transparent and only consists of projects that promote positive societal change
1986	Wind Energy Fund (first in Europe)	Funding mechanism for wind energy and later green energy
1994	Microfinance Investment Fund (first in Europe)	An investment option for socially-conscious customers in non-industrialized areas
1996	Fair Trade Fund (first in the world)	Fund the “missing middle”
2006	Sustainable Checking Account (first in the world)	Address the social challenge of consumer debt by providing checking accounts while not providing loans for consumption

Figure 3: Triodos Bank’s sustainable financial innovations

encompasses its identity but is operationalized in every decision made. As employees describe it, sustainability is “the only way at Triodos Bank.” This has even led to some potential employees to not pursue employment opportunities, finding Triodos “too sustainable.” Triodos Bank’s loan portfolio is invested solely in initiatives that improve the environment, society, and culture. To increase accountability, it makes all of its loans transparent. In cases where it is unclear if a project actively improves society, dialogues are held and include senior-ranking employees. Through such practices, Triodos Bank is not only positively deviant from the ethical norm of the financial sector, but also positively deviant from the ethical norm of the sustainable finance sector.

RESEARCH FINDINGS

Through the case study analysis of Triodos Bank, five sustainable financial innovations stand out to mark important milestones in the history of the bank and define core phases of development during its 41 years of operation. Each of these innovations is detailed in the subsections that follow through a TGPT analysis. Figure 3 outlines the sustainable financial innovations identified.

Sustainable and Transparent Banking

In 1960, four individuals formed a working group in the Netherlands around the idea of using money as a vehicle for social change. They invited 20-30 social activists to study the meaning and qualities of money along with the role of banking. These study groups and social innovation meetings continued, eventually framing the conceptual and intellectual foundation of what would become Triodos Bank.

The 1968 riots in France spurred the Dutch group to transform these discussions into action. Says one interviewee: “When we learned about the uprisings in Paris, we felt we had to go ahead with our idea. It gave us a real push.” The protests in France were an arena to question the economic systems in both the West and the East; directed against Western capitalism and Stalinist totalitarianism. Starting with a series of student protests, the riots elevated into a two-week strike by 11-million French workers and almost collapsed the French government.²

It was during this time that Triodos’ founders considered how to go forward. Their first idea was to provide consulting services to help businesses support positive societal change but they soon discovered that these businesses did not have sufficient access to capital. They therefore realized that “what is needed is a new type of bank,” according to Adri Dijkstra, the Deputy Managing Director. The idea to initiate social change through positive, entrepreneurial activity is consistent with the PEN formation stage in the framework proposed. Through the coordination of the working group, companies, organizations, and foundations pooled their funds together to launch the Triodos Foundation in 1971. An early employee summarized this process:

This experience [taught us] that you could handle money in a different way and if you worked together you could benefit from being part of a group. In those days in the Netherlands, it was not possible to negotiate

²Visit: http://news.bbc.co.uk/onthisday/hi/dates/stories/may/13/newsid_2512000/2512413.stm

with a bank about interest rates. Only rich people did that. Because of this pool, all of a sudden we became an entity that could negotiate.

The Triodos Foundation deposited these pooled funds in a conventional bank in the Netherlands, which paid them a higher interest rate than they could have earned independently with smaller deposits. The depositors then relinquished a percentage of the interest, which Triodos Foundation used to finance social entrepreneurs with affordable loans. As described by one of the founding members, “we formed a circle of individuals who, together, then provided the guarantee for the loan. A number of small guarantees by individuals secured the loan.” This continued throughout the mid-1970s, as money became a vehicle for social change. Based on the success of its early experiments, the PEN, held together by a shared mission and set of ethical values, went further to apply for a banking license. After an intense 18-month screening process by the central bank of the Netherlands, Triodos Bank was established in 1980 with the equivalent of 540,000 Euros.

Triodos Bank was therefore founded under the positive ethical principle that its entire loan portfolio should be invested in sustainable initiatives. To uphold this shared mission and inform stakeholders, Triodos Bank adopts a complete transparency model to inform stakeholders where their money goes. Present technologies afford Triodos Bank to make this tenet even more prominent through the publishing of every administered loan on the Google Maps platform.³ The Director of Triodos Bank in the Netherlands summarizes the lending process as follows:

We think our core activity on the lending side is really to find the pioneers in business— those who are the frontrunners in making their sector more sustainable. In the energy sector, we have already financed renewable energy, but only the best in class. So we are quite strict in our

³Visit: <http://www.triodos.com/en/about-triodos-bank/know-where-your-money-goes/> to observe Triodos Bank’s “Know where your money goes” platform.

criteria there.

Wind Energy Fund

In 1986, the worst nuclear power plant disaster in history occurred at Chernobyl in the Ukraine. Highly radioactive fallout escaped into the atmosphere over an extensive geographic area. The strength of the explosion was 400-times greater than that of the atomic bomb that exploded over Hiroshima (IAEA, 1992).

The Chernobyl disaster sparked a discussion about alternative sources of energy in Europe. The anti-nuclear movement in Europe that had fought for the nuclear weapon treaty between the U.S. and the Soviet Union began to join forces with the “green” movement. A third party, Triodos Bank’s depositors, also raised concerns about nuclear energy as a result of the Chernobyl disaster. Peter Blom, who started with Triodos as a volunteer and is now the current CEO of Triodos Bank, recalled in an interview: “Our depositors called and asked us, what are you going to do about this issue? Are you providing options for us to invest in alternatives?”

In 1986, wind energy technology was in the early stages of its technological development. No bank in Europe offered any investment products in “clean” energy. Triodos Bank identified a promising wind farm project in Denmark and a small engineering company in the Netherlands as partners. The engineering company developed the technology and oversaw the project management of the wind farm project. Partnering with these two organizations was a conscious effort to evolve the PEN and incorporate actors beyond NGOs and concerned depositors to address the energy crisis.

Peter Blom, reflecting on this step in Triodos’ development, emphasized that Triodos recognized that this investment would be too great a risk for the bank but that the societal need for a financial innovation in the field of renewable energy was important. In order to move the Dutch society towards renewable energy, Triodos

Bank realized it needed a much larger depositor base to be invested. Using a discourse and framing strategy as prescribed by Lovell (2008), Triodos Bank calculated and communicated that every Dutch family would need to invest 1 ANG per kilowatt-hour/year in green energy in order offset their personal energy footprint, or an average of 3,000 ANG per year (about 1,700 USD). Peter Blom recalls:

People were very inspired by this calculation and took this very seriously. With the help of our calculation scheme, they made exact calculations of how much they would need to invest in order to clean up their personal energy record. The very conscious concept of being responsible for your own energy consumption enabled Triodos to start the first Wind Fund.

Thus, two years after the Chernobyl disaster, Triodos Bank was able to finance the first wind farm in the world— a five-megawatt plant off the coast of Denmark.

To further expand the Wind Energy Fund, which eventually grew into the Green Fund, a former Managing Director of Triodos Bank recognized the need to financially incentivize people. He therefore decided to organize a seminar with other bankers and members of parliament to propose a tax break for green investments. Inspired by the discussion, two members of parliament who were in attendance proposed a policy to create tax incentives for private investors in green funds. Even though Triodos was the only entity with an existing green fund at the time (which only totaled 10-million Euros), the press was highly enthusiastic about the endeavor and popularized Triodos Bank along with the proposed tax break throughout the Netherlands. As a result of the strong support and popularization of the green tax incentive, parliament passed the law one year later in 1995. The seminar also motivated the Dutch Banker's Association to create a green investing committee that meets six times per year. Consequently, green funds became a popular financial product that is now offered by a majority of banks in the Netherlands, expanding the market from 10-million to 700-billion Euros in 2011.

This case demonstrates the evolution of PENs as the original PEN coordinated by Triodos Bank was expanded beyond the initial set of actors on multiple occasions to increase the impact of clean energy funds. In addition, the amplifying effect is witnessed at the PEN level as other organizations began to imitate the positive ethical actions initiated by Triodos Bank.

Microfinance Investment Fund

Not all crises are as sudden and prominent as the 1968 riots in France or the Chernobyl disaster. In the early 1990s, the growing North-South divide and lack of development success in many areas concerned two Dutch NGOs: the Hivos and Doen Foundations. Despite their in-depth knowledge about local challenges and opportunities for development in non-industrialized countries, they lacked the financial expertise necessary to advance their work and impact. Aware of Triodos Bank's corporate objective to pursue positive social change, the Dutch NGOs contacted Triodos Bank in 1994 for a potential collaboration in the MF sector. Soon thereafter in the same year, Triodos Bank made its first investment in microfinance through a South African bank. After further discussions, Triodos Bank became more interested in the microfinance sector and set up a meeting in 1995 between Marilou van Golstein Brouwers, Managing Director of Triodos Investment Management, and Muhammad Yunus, the founder of Grameen Bank in Bangladesh and eventual recipient of the Nobel Peace Prize for his contributions to the microfinance sector. After the meeting, Van Golstein Brouwers decided to focus international investments on microfinance, "because that's where [Triodos] would add the most value." Beginning in 1996, Triodos coordinated with the two Dutch NGOs to launch two closed MF funds: Hivos-Triodos Fund and Triodos-Doen Foundation; both aimed to produce a developmental return rather than a financial return.

After recognizing a stakeholder interest in MF investment opportunities, Triodos launched the first open MF fund in 2002—the Fair Share Fund. It remains one of

the few funds in Europe that provides private individuals with the opportunity to invest in the MF sector. In 2009, Triodos Bank added a second open MF fund to its portfolio, the Triodos Microfinance Fund, that is geared toward institutional and other larger investors. Each of these funds is based on a combination of investments in various microfinance institutions, or MFIs, worldwide, ranging in size from 5-million to 1-billion Euros in assets. The process of selecting partner MFIs is based on a full review that includes an assessment of the targeted client group, the lending process, the risk profiling, and most importantly the vision and intentions. Moreover, each of the MFIs that Triodos Bank invests in are mission-driven institutions that aim to improve the lives of the poor that they bank with. There are now 23 dedicated co-workers in Triodos Bank focused on emerging markets in 40 different countries and in cooperation with 82 MFIs.

The development of Triodos Bank's MF funds confirms the finding from the previous case: PENs are not static. They evolve over time to improve upon the sustainable financial innovation put forth. This case also reveals that crises, while at the root of PEN mobilization, are not always universally recognized as crises by non-positive ethical actors. Also interesting is the trajectory of PENs as they grow— an issue that deserves further research. Furthermore, the senior manager of the MF department cautions the expansion of PENs, stating:

You really have to be selective about whom you do business with. You see soon enough who is a good partner, if you know the sector. You have to look at how transparent their procedures are... Basically, you sort of know by talking to management. It all comes back to values. You have to ask what is their main motive for getting into this business.

In the case of the MF movement at Triodos Bank, the common values and positive objectives between Triodos Bank and the Dutch NGOs established a high-level of trust and, consequently, the willingness to collaborate to develop the first MF fund in Europe. Triodos also works closely with the MFIs it invests in, and is a

shareholder in 19 of them. As an example of its engagement with other positive ethical actors, Triodos hosts an annual workshop on microfinance for its partners, creating a space for reflection and sharing.

Fair Trade Fund

In the early 1990s, the debt crisis in South America initiated a debate in Europe about the responsibility of investors and banks to the economic development of non-industrialized countries, particularly those in South America. This crisis, which revealed the plight of producers in non-industrialized countries from not receiving a fair share of profits, served as the roots for the fair trade movement. Church groups hosted discussions and fund-raising events to address the situation in South America, thus becoming the space where the idea of fair trade commerce spread. Many churches even began to offer retail space for fair trade stores.

Through the church movement, Triodos Bank realized that it needed to finance producers in non-industrialized countries, which it considered the “missing middle”— a segment of society in need of loans that exceeded the cap of microcredit loans but were not large enough to be catered to by conventional banks. Triodos Bank actively began engaging with churches on these issues in addition to larger issues such as the purpose of money in society. The following excerpt from an interview with Thomas Steiner, one of Triodos’ early employees, captures this collaboration and PEN formation:

When I joined in '91, the church movement was concerned about the enormous debt in Latin America, and they were asking who was to blame... They had the feeling that a completely new way of banking could be the answer to the problem in Latin America and that people should put their money with Triodos Bank. For almost five years, from around 1988 until 1993, [Triodos was] approached almost weekly by

churches and groups of people to discuss money and how money works in society... They were the same people who launched the Max Havelaar concept a few years later that is now called fair trade.

Churches became a new group of institutional investors for Triodos, focused on alleviating poverty through financial instruments aimed to empower the “missing middle.” Assisted by its engagements in the microfinance movement, Triodos began building relationships with cooperatives and fair trade exporters to finance exports and guarantee financing for fair trade or organic farms to sell their products at a fair share— a practice termed trade financing. In 2008, Triodos officially launched its Fair Trade Fund to finance the various actors in the fair trade movement, ranging from trade financing to loans for local organizations selling fair trade products. As Koert Jansen, the Manager of the Triodos Fair Trade Fund, remarks, “financing is often the weak link in the chain of fair trade or organic products. We enable the cooperatives to pay their farmers a good price.” In order to help finance the initiative, Jansen explains that “the fund has been set up as a foundation with guarantors covering part of the risk. For example, the NGOs Hivos and ICCO, and the G-Star Raw Denim Foundation... Triodos Bank provides the fund with loans of up to three-times the amount set aside by guarantors.” Triodos’ consulting branch, Triodos Facet, has since developed a training program on value chain financing and presents its findings at conferences.

Again, the first innovative financial product to fund cooperatives in the fair trade movement was launched via a PEN. Similar to the previous case, PEN formation was significantly based upon positive ethical actors (i.e. churches) drawn to the positive organizational ethics of Triodos Bank and expanded with other positive ethical actors in the fair trade movement.

Sustainable Checking Account

In the early 2000s, another crisis began to emerge and attract the attention of the general public: the growing consumer debt in Europe and the United States. During this same period, several customer focus groups and customer satisfaction surveys revealed a growing demand for customer checking accounts at Triodos Bank, a product not offered at the time. Throughout its years of operation, Triodos Bank had struggled with providing more retail products to its customers as its strict lending principles were in direct conflict with any type of financial products that would contribute towards unsustainable consumption. This positive ethical stance starkly contrasts the attitudes of other banks, which failed to identify or ignored the unsustainable impacts of credit cards and consumer debt on society. The challenge that Triodos Bank perceived for its operation was how to provide full-banking services, as being demanded by its customer base, but not contribute to consumer debt. Pierre Aeby, the CFO for Triodos, summarizes the internal debate among co-workers as follows:

Our principle is that we invest our money on sustainable projects. That is the basics. On the other hand, we want to serve our clients, and sometimes there is a dilemma because a client is not always fully sustainable. They don't [always] eat organic or... drive an electric car. But if the customers make a choice that's not sustainable, do you penalize them for that and say, 'Okay, you have to go to another bank?' In regard to consumer loans, we think about what customers are spending their money on and most importantly, we believe we have an ethical responsibility in regard to the debt position of our customers, which actually implies helping to avoid being a driver for consumption... We cannot support a five-year loan for buying a vacation package and building up debt that way. So, how do you manage that?

Triodos Bank collaborated with a specific segment of Dutch consumers, termed “cultural creatives” (Ray & Anderson, 2000), to develop a sustainable checking account. “Cultural creatives” refers to a particular segment of Dutch consumers who are socially conscious and looking for an alternative bank. It is estimated that they make up to 15% of the Dutch society. Through the focus groups and meetings held, Triodos decided to offer a checking account without credit cards or consumer loans but with a credit line based upon the monthly income of the customer with a few exceptions for sustainable purchases such as an electric car. This decision was favored by all the members in the PEN in order to avoid directly contributing to unsustainable consumption. One interesting characteristic of this PEN that causes it to differ from earlier examples is its inclusion of a broader segment of society.

Implementing this innovative idea proved to be rather challenging. During the same period, legislation was passed in the Netherlands requiring Dutch banks to have one ATM for every 4,000 customers. Triodos worked with other sustainable banks, however, and successfully lobbied the EU commission to drop the law based on its discrimination against small banks. Instead, to avoid incurring a significant expense, Triodos Bank further expanded the PEN through an agreement with Rabobank, another sustainable bank in the Netherlands, to enable its customers to use a Rabo ATM as often as eight times per day to withdraw up to 1,500 Euros. Similar to the previous innovations, the press covered Triodos’ new sustainable checking accounts. Dick Tichelaar, a manager at Triodos Bank, recounts:

I watched the report about Triodos Bank on TV on a Sunday when we had just launched the current account and I called my colleagues. We thought, ‘oh, something is happening here.’ Monday morning came the big surprise. It was fantastic. We had an application volume of about six-times what we expected.

Within three years, Triodos Netherlands had opened 30,000 checking accounts serving 36,000 customers. Checking accounts that lack credit cards or consumer

loans are not profitable financial products but they are a sustainable solution for countering the growing consumer debt crisis. They also provide an avenue for increasing the funds that go towards Triodos' sustainable loans and funds. Tichelaar explains:

We want to grow our impact in society. It sounds a little bit high spoken, but we want to make a difference... We want to provide more loans for innovative projects. That translates into more customers. But increasing these numbers is not our main goal, it is the means to get to our goals.

Through engaging in a PEN with a socially-conscious segment of society and expanding it to include other positive ethical actors, including another sustainable bank and positive media channels, Triodos Bank was able to achieve a financial innovation that met societal needs in a sustainable manner.

Summary of Findings

Employing the crisis-PEN-innovation framework proposed, the results from the case study are summarized in Figure 4. The data are consistent with the framework, suggesting that the emergence of a crisis and its urgency allows for a collective articulation of values through a PEN. In each of the five cases explored, various positive ethical actors collaborated within a PEN to develop sustainable financial innovations to address an external crisis. The PEN served as both a space to cultivate an idea and also a medium for facilitating the innovation that resulted from it.

Crisis	PEN (Positive Ethical Network)	Sustainable Financial Innovation
Riots in France (1968)	Early founding group, social activists, and investors	Formation of Triodos Bank: a fully transparent bank that only finances sustainable projects
Chernobyl disaster (1986)	Anti-nuclear movement NGOs, green movement NGOs, Triodos Bank, entrepreneurs, and consumers	Wind Energy Fund (first in Europe)
North-South divide (1990s)	Dutch NGOs, Triodos Bank, consumer groups, MFIs, private investors, institutional investors	Microfinance Investment Fund (first in Europe)
Debt crisis in South America (1994)	Church groups, Triodos Bank, fair trade organizations, private investors, institutional investors	Fair Trade Fund (first in the world)
Consumer Debt (2000s)	Triodos Bank, socially-conscious consumers: “cultural creative”	Sustainable Checking Account (first in the world)

Figure 4: Crisis-PEN-Innovation framework of Triodos Bank case study

CONTRIBUTIONS AND FURTHER RESEARCH

The crisis-PEN-innovation framework makes four contributions to the POE literature: 1) positions corporate sustainability through a POE lens; 2) formalizes the PEN construction through POE theory; 3) proposes PENs are mobilized to respond to external crises; and 4) demonstrates how PENs cultivate and facilitate the sustainability innovation process. We conducted an initial test of this framework through an in-depth case study of Triodos Bank, where we employed TGPT to analyze the processes behind five sustainable financial innovations. The data imply that the role of PENs for advancing sustainable financial practices and innovations can be substantial. This research indicates that PENs are not only relevant for translating crises into positive opportunities, but also for the ability to take advantage of such opportunities and translate values into marketable products and services.

The importance of employing a POE lens to capture PEN formation, mobilization, and implementation of a sustainable financial innovation needs to be re-emphasized.

The theoretical framework set forth changes the landscape of sustainable financial innovations— postulating that these innovations require positive ethical actors. Therefore to foster a sustainable society, financial organizations must adopt and exhibit positive organizational ethics if they are to develop the sustainability innovations they are capable of and ideally situated to put forth. The MF, SRI, and sustainable banking movements demonstrate what relatively small PENs are capable of achieving. In contrast, non-positive ethical financial institutions were responsible for causing the global financial crisis of 2008. The development of much larger PENs through a transformational change in value and ethics systems of larger financial intermediaries is therefore critical in developing the sustainable financial innovations required for a sustainable society.

Moving forward, further research needs to be conducted to better understand the potential of PENs in promoting sustainable financial innovations and sustainability innovations in general. The theory first needs to be rigorously tested in the financial sector. Do all sustainable financial innovations follow the crisis-PEN-innovation framework proposed in this paper or are there exceptions? If there are exceptions, what are the cases when the framework does not apply? Are there instances when PENs are triggered by other stimuli or when sustainable financial innovations are formed in the absence of PENs? It is also important to determine if the crisis-PEN-innovation framework can extend beyond the financial industry.

Researchers are thus urged to test the proposed framework or variants of it on industries beyond finance in order to determine the constraints of the framework in applying it to sustainability innovations at large. If the framework is restricted to the financial sector, what makes the financial industry a unique case?

An additional area of research is to better understand the role of external crises in triggering positive reactions. Furthermore, not all crises lead to the formation of PENs and sustainable financial innovations. Is there something specific about certain crises or certain responses that elicit the responses captured in this study? The timing of crises is likely to be important. For instance, the 1968 riots in France

took place during the same time that the early founders of Triodos Bank began holding discussions around a new way of banking. Also critical are the members of a PEN. While crises can motivate a variety of positive responses, not all are realized into sustainable innovations. In the sustainable banking innovations identified, either Triodos Bank or another actor played the role of being a coordinator in the PEN. Therefore, it is important to study how PENs are formed and mobilized, focusing on the actors behind them. It may also be the case that PENs form organically and without a coordinator in response to a crisis, as is often the case with social movements. Such an instance demonstrates that social movements are consistent with the definition of a PEN outlined in this paper— a purpose-driven network of positive ethical actors aligned under a shared set of values and goals; where an actor can be any individual or group of individuals who may or may not represent an organization, institution, or smaller PEN.

Equally important to determining the applicability of the framework is to better understand the trajectory of sustainable financial innovations. Specifically, the latest research on the MF and SRI movements informs us that sustainable financial innovations do not always remain sustainable. Further investigation is therefore required, through the framework proposed, to understand what happens in cases when sustainable financial innovations either fail to materialize or materialize but become less sustainable over time. One hypothesis is that as a PEN expands, it runs a greater risk of incorporating non-positive ethical actors who are capable of taking advantage of a sustainability innovation and using it to create self-centered, non-positive outcomes. If this holds, caution must be implored by PENs to ensure network entrants share the same positive values and goals. The spreading of these positive values through the amplifying effect, as observed by the development of the Wind Energy Fund at Triodos Bank, should also be studied more in depth to understand successful cases of PEN expansion or even conversion of non-positive ethical actors into positive ethical ones.

A prerequisite for many of these efforts to measure the trajectory of sustainability

innovations is the development of frameworks for measuring the efficacy and performance of sustainability innovations. Why are some sustainability innovations considered successes while others considered failures? In attaining a greater understanding of the development of sustainability innovations, from their formulation to their trajectory and outcomes, practitioners and academics in this space can more effectively work towards developing a sustainable society.

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