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**Understanding Responsible Innovation in
Small Producers' Clusters in Northern Vietnam:
A grounded theory approach to globalization
and poverty alleviation**

Jaap Voeten

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**Understanding Responsible Innovation in
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A grounded theory approach to globalization
and poverty alleviation**

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After having worked for long to get this PhD thesis defensible, I finally arrived at writing the acknowledgements section. It feels like a personal victory: mission accomplished! The sorting out and organizing of the PhD was an expedition that involved delicately balancing possibilities, constraints, ambitions and responsibilities. Moreover, the actual PhD path was sometimes quite lonely and introvert, implying a certain degree of social withdrawal. For that reason I really value the support and appreciation that I have enjoyed along the road.

I applied grounded theory as the main research methodology. It is one that involves inductively developing theoretical propositions about societal processes from the ground. Inherently the data collection and interpretation were participatory processes. They could not have worked without the openness and cooperation of the people concerned. I am particularly fortunate that this approach worked well in the villages in northern Vietnam. I sincerely thank the producers, shop owners, workers, suppliers, clients, local administrators and all others around in Bat Trang, Van Phuc, Duong Lieu, Quan Hoa, and Phu Vinh for their willingness to share their views, experiences, ideas, opinions and perceptions. These hard working people set aside time and welcomed me into their small-scale workshops and homes for a tea and chat. Their stories provided me with many insights about what was going on in the villages.

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The idea for this PhD germinated when I was working for the Maastricht School of Management. My colleagues Jeanette Oostijen, Meinhard Gans, Ien Bakker and others encouraged and challenged me to be serious about developing this idea to do a PhD (at the same time we were having grand ideas and big laughs predominantly about the priority (prisoner's) dilemma of acquisition). A wider circle of people in Nuffic projects in Vietnam and Yemen encouraged inspired and challenged me to develop my PhD plan and provided additional advice about how to

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Chapter 1

INTRODUCTION

1.1 Background

Since the early 1990s I have lived at regular intervals in Vietnam, working as an advisor for several long-term projects promoting entrepreneurship and small business development. I first went shortly after the Vietnamese communist party adopted *Doi Moi*, the economic reform policy that would shift the economy from its socialist orientation towards a free and more open market economy. By then, Vietnam was one of the poorest countries in Southeast Asia. The economic reforms took place around the same time as the fall of the Berlin Wall and the collapse of the Soviet Union. During my first working visits I found that my Vietnamese counterparts were optimistic about the market economy and trade liberalization. Vietnam had been through many troubled years: a war with America, hardships during the socialist post-reunification era and political and military tensions with Cambodia and China. There was much anticipation that, through these reforms and opening up to the world, Vietnam would see some prosperity at last. The Vietnamese were unaccustomed to having westerners visit and welcomed us as representatives of the new times to come. They were eagerly looking for business opportunities and assistance projects to support the transition and development process and becoming linked with the world at large.

Over the course of my annual stays in Hanoi and the surrounding rural villages in the north I observed remarkable societal changes occurring; with the emergence of new businesses, infrastructure, industrial zones, export companies, shops, luxury cars, an airport, hotels, department stores, internet cafes, motor cycles and much more. Foreign business people and investors came to Vietnam and the Vietnamese people became their professional counterparts and fluent in English. I had the idea that I was witnessing a textbook example of a 'booming' economy. My impressions were confirmed in the many macro-economic analyses and outlooks as well as official and media reports praising Vietnam as a country in rapid transition, which soon became one of the fastest growing economies in Southeast Asia.

However, while working on projects in the field, I also became aware of another reality. I observed that poverty remained persistent in many places. New 'inconvenient' societal problems were emerging alongside market liberalization, economic growth and the closer links to the world economy. In meetings in rural areas, small producers told me about the uneven distribution of wealth caused by structural problems. Powerful economic actors often dominated

value chains and small producers could only derive marginal incomes. I also became aware of new and growing environmental problems (e.g. the use of chemicals in new production processes resulting in new health problems for workers and villagers), political governance issues, the loss of social cohesion and a rise in social injustice. Through contacts with the NGO and development community, I heard more reports and observations about the growing inequalities between rich and poor. These observations were in stark contrast to the resounding official reports on promising economic figures and the economic outlook.

One particular area, where I had gained some years of experience, particularly embodied this paradox of an optimistic economic outlook that was also experiencing a range of (associated) distributional, environmental and social stress points. These were the small craft villages in the Red River Delta in northern Vietnam. These clusters of small and household businesses typically produce specialized crafts such as ceramics, silk, noodles, bamboo products and rice candy, to name a few. The introduction of free enterprise and the opening up of the economy resulted in an expansion of small-scale industrial activities. Small producers were seeking opportunities and taking advantages of new market opportunities. The informally organized production in the clusters - cooperating and exchanging skills and knowledge, sharing orders - seemed to provide extra strength and flexibility. Actually, in these villages the two realities collided. Economic growth and prosperity through dynamism and creativity in seizing new opportunities went hand in hand with continued poverty, a growing income gap and new societal and environmental problems. People in these villages seemed to stand in two worlds: the one foot in modern times, doing business in Hanoi and the outside world. The other foot in a world with traditional institutions and customs which, while not free of poverty, invariably showed less marked contrasts between rich and poor; a world where people lived with some degree of harmony and solidarity between each other and their environment. Moreover, the usual assumption made by development economists and policy makers - that these informally organized businesses would eventually disappear under the pressure of economic and industrial modernization - did not apply (at least for the time being). On the contrary, many small producers in the villages were investing in technology, introducing new products and business practices, raising the quality standards of their products and looking for new export markets. These small producers were engaging in economic development without assistance or any formal economic or development planning.

I noticed different dynamics at play in different villages. In some villages the creation of wealth through the *new economic dynamism*¹ associated with globalization seemed to go hand in hand with some alleviation of poverty and some environmental improvements. In other villages the new realities seemed to enable the creation of wealth but had little discernible impact on more general social and environmental conditions. In other, extreme cases, the creation of new wealth seemed to be accompanied by even greater inequalities and a host of environmental concerns. These observations triggered my interest to better understand the many possible pathways and outcomes associated with these new economic dynamics, particularly the extent to which poor people are able to participate in, and benefit from, economic developments in their communities. My interest focused on what was happening in these communities on the ground in economic, social and environmental terms and what factors might explain the different trends described above. This gave me the impetus to explore the issue more methodically and scientifically through the framework of a PhD.

1.2 Key concepts

As an initial step in developing a concrete research plan, I started to reflect on the questions raised by official reports, economic data and my field observations. I began theoretical explorations of the literature in pursuit of clues, leads and associations. I found my research interest was related to at least four (partly overlapping) key debates in current development theory and practice. The first is poverty, the alleviation of which remains a hotly contested subject, approached through numerous angles, definitions, insights, explanations and strategies. This is strongly related to the second debate: sustainable development, raising broader the environmental and social issues that can have a negative impact on society. The third debate concerns the significance of small business and groups of small businesses in informal contexts in developing countries, an important topic in development economics as these types of enterprises have a potential to provide solutions to poverty through improving incomes and creating employment and business opportunities. Lastly these three debates are all intermeshed with the ongoing globalization debate. Numerous studies have sought to evaluate the impact of globalization in these respects. This sub-section explores these broad debates, how they have evolved over time and how they relate to each other. This analysis provides the basis for arriving at a focused central research question, which takes into account the most relevant scientific and policy discourses.

¹ I have used *new economic dynamism* as an overall impression which I loosely interpreted from the macro-economic evidence, my observations in the small villagers and reports of NGOs working on the ground. The term does not imply or embody details about competitiveness, innovation and so forth.

Poverty

Poverty has always been with us and continues to exist in a large number of developing countries. There are many approaches to defining and describing the problem, all proposing (or implying) different solutions. For a long time, poverty was understood and measured solely in terms of income, consumption or production. Often it is defined against a fixed subsistence income level; the *poverty line* (Ravallion 2003). However, more multi-dimensional concepts to defining poverty have come to the fore, which do not solely rely on measuring income or consumption expenditure per capita (Bourguignon and Chakravarty 2003). This has provoked an intense debate over the true meaning of (and ways to resolve) poverty in developing countries over the last few years (Jitsuchon 2009). It has led development practitioners, scientists and policy makers to develop a range of measures for defining, measure (and addressing) poverty. Approaches to defining and alleviating poverty now include more societal and human dimensions (Wagle 2000, London 2007). For instance, the United Nations Development Program (UNDP 1990) has developed a composite indicator called the Human Development Index (HDI), which assesses development levels on the basis of three indicators: life expectancy, adult literacy and the per capita Gross Domestic Product (GDP). Another approach termed *basic needs* defines households as being poor if their food, clothing, medical, educational and other needs are not being met (Glewwe 1990). Others view poverty as a function of a lack of individual capabilities to attain a basic level of human well-being. Sen (1999) proposed that measures of poverty should include the physical condition of individuals and their capabilities to make the most of the opportunities they have. Alkire (2007) advocates adding participation highlighting the importance of the notion of *inclusive development* (World Bank 2008). The term inclusive has focused attention on participation and how gains in well-being are distributed within society (Rauniyar and Kanbur 2010). Thus, recent discourses have extended the notion of development, bringing into play dimensions of well-being that go beyond income. A general agreement is emerging that poverty in developing countries is a complex multidimensional issue that needs to take into account the contextual environmental and social aspects. The poverty debate has become increasingly intertwined with the debate on sustainable development (Hopwood et al. 2005).

Sustainable Development

Brundtland (1987) first articulated the term sustainable development in the report 'Our Common Future' which governments, multilateral organizations and civil society further consolidated into Agenda 21 (United Nations 1992). Sustainable development describes and advocates forms of development that will meet the needs of the present generation without compromising the

ability of others around the planet and future generations to meet their needs. The concept is the result of growing awareness of the global links between environmental problems, socio-economic issues, inequality and concerns about a healthy future for humanity (Hopwood et al. 2005). Sustainable development involves aligning local and current interests with future interests and those elsewhere on the planet. In short, actions taken today to generate local livelihoods should not threaten or endanger the prospects of future generations or of those elsewhere (Sayer and Campbell 2004). Sustainable development emphasizes the need to recognize the generational and distributional aspects of the benefits of development and to balance social and environmental dimensions along with economic ones.

The sustainable development discourse has highlighted already existing doubts about the claim - that still dominates much mainstream economic policy - that increased global trade and industry will bring about international prosperity and maximize human well-being (Hopwood et al. 2005). Advocates of sustainable development point out that models based on this assumption have failed to eradicate poverty, globally or within developing countries, and have damaged the environment, leading to a “downward spiral of poverty and environmental degradation” (Brundtland 1987). Against that background, sustainable development explicitly identifies that poverty alleviation policies must ensure equitable access to resources, clean water, sanitation, medical care and education, challenge gender inequality and preserve political freedom (Sen 1999, World Bank 2000). It seeks to ensure that the development process (in developed and emerging countries) explicitly takes account of poverty, social justice and environmental limits. It argues that economic development is not simply about the creation of aggregate wealth but should also contribute to social development and not occur at the expense of environmental degradation. Inclusive development adds another dimension: the recognition that sustainability should be owned by people including the poor and is not something that can be imposed from above by a small minority of technocrats or policy makers: “the very soul of sustainability is that it is participatory” (Carly and Christie 2000, Bell and Morse 2003).

Initial interest in sustainable development was mainly limited to governments and civil society. However, in the 1990s the idea that business has a critical role to play to lead the world towards a sustainable world gained ground (Elkington 1999, Hart 2007, Roome and Boons 2005). *Sustainable business* became popularized in the slogan People-Planet-Profit, which expressed an expanded set of values and criteria for measuring the organizational and societal success of business. In this world view the economic aspect (an economically sustainable system that produces goods and services on a continuing basis) of business operations should be balanced by

a social aspect (a socially sustainable system that provides distributional equity, adequate provision of health, education and other social services, gender equity, political accountability and participation) and an environmental aspect (an environmentally sustainable system that maintains a stable resource base and avoids the over-exploitation of renewable resource systems or environmental functions) (Harris et al. 2001).

Small business in developing countries

In development economics, economic growth is traditionally seen as the way to address poverty, particularly through the development of the private sector in developing countries. In the 1970s there was a move to promote entrepreneurship in small businesses at the micro level in developing countries, which emerged as an alternative to the earlier macro-economic approaches to industrialization (Prebisch 1950, Hirschmann 1958, Lewis 1954, Solow 1956). Schumacher's slogan "Small is beautiful" was the leading slogan of this idea which called for a shift in development policies from just encouraging industrial zones and technology transfer, to a mix of policies that would also provide development opportunities for small business (Schumacher 1973, Harper and Ramachandran 1984). This implied the adoption and promotion of 'appropriate' technologies; technologies that were small-scale, labor-intensive, energy-efficient, environmentally sound, and locally controlled (Smilie 1991). An important assumption in all this change would be driven by interventions from western scientists and intermediate technology advisors who would provide the assistance through which these small producers would benefit. Local capacities were only discussed in the context of *indigenous knowledge*; mostly limited to renewing applications of traditional techniques. Related entrepreneurship-based concepts included technology transfer models (Al-Ghailani and Moor 1995, Stewart 1977), micro-credit (Khandker 1998, Chavan and Ramakumar 2002), business development services (Dawson 1997), and more recently the bottom of the pyramid concept (Prahalad 2006). Little consideration was given to potential of small producers to introduce advanced technologies or link up directly with the outside world without inputs from knowledgeable international professionals (Kaplinsky 1990).

In the 1980s, a new paradigm emerged which placed much greater emphasis on improved market access as a precondition for economic development. Structural adjustment policies - cemented in the framework of the Washington Consensus - promoted the neo-liberal idea of giving markets the leading role in stimulating development: deregulating industries, privatizing public enterprises and removing trade barriers (Hodler 2011). The idea of *markets for the poor* - markets that would be harnessed to work better for the poor by building bridges between small

producers and private markets - became seen as a route to development. This required the creation of an *enabling environment* to provide a new context within which small producers and their communities would have the opportunity to benefit from economic development (Meyer-Stamer 2006). In reality, however, structural rigidities in local markets, arising from monopolies and other failures, were more persistent than expected (Aubert 2005). Eventually, it became recognized that there were limits to the extent to which the prescriptions of privatization, liberalization and deregulation were able to deliver sustainable growth in the developing world (Shiferaw et al. 2008, Helmsing and Vellema 2011, World Bank 2002).

The significance of small businesses operating in clusters received substantial attention in the 1990s, both in developed and developing countries. Clusters were defined as local concentrations of horizontally or vertically linked firms and supporting organizations that specialize in related lines of business (Porter 1996). Clusters are dense networks that are successful because of powerful positive externalities and spill-overs between firms and different types of institutions. Firms located within a cluster can make transactions more efficiently and engage in mutually complementary activities. Other positive externalities - also referred to as collective efficiencies - include the possibility of flexible specialization, technologies, sharing available knowledge and the rapid implementation of innovations (Schmitz 1989, Nadvi and Schmitz 1994). Porter (1996) stresses that geographic, cultural and institutional proximity provide companies with special access, closer relationships, better information, powerful incentives and other advantages, which are difficult to tap into from a distance. This cooperation is often based on trust, technological and knowledge spill-over (Caniëls and Romijn 2003). Cluster theory was mostly discussed by regional and economic geographers. Kitson et al. (2004) advances a theory of territorial and regional competitiveness, exploring the links between clusters and innovation. Storper (1997) advanced the related idea of the learning region, emphasizing the role of *place competitiveness*. These latter debates increasingly emerged as academics and policy makers explored the question of significance and strengths of regions in a globalizing world.

Globalization

By the end of the 1990s, options for small business development and poverty alleviation were being widely discussed in the context of sub-sectors (Boomgaard et al. 1992) and global value chains, both linked with the emerging processes of globalization (Gereffi et al. 2005, Humphrey and Schmitz 2002). Value chain analysis focuses on understanding markets, their relationships and the participation of different actors - from producers to consumers. It provides an analytical tool that can be used to interpret how poor people in small and micro enterprises in developing

countries can participate in economic development and globalization. Governance is a key aspect of this since successful participation in this domain implies challenging the power of dominant actors who introduce innovations but appropriate most of the value created by other chain actors, a commonplace phenomenon in developing countries (Gereffi et al. 2005, Helmsing and Vellema 2011).

Questions about economic opportunities and poverty became increasingly prominent in the globalization discourse in the 1990s, both on the political agenda and in academic research. Some advocated promoting globalization (through e.g. international trade and foreign direct investment) which could act as an engine for growth and sustainable development in poor countries (Irwin and Tervio 2002, Dollar and Kraay 2004). Paradoxically, while the debate about the implications of sustainable development was being developed, the forces of economic globalization were beginning to unfold (Roome 2011). But some questioned whether the globalization model was capable of promoting sustainable development and alleviating poverty (Harrison 2006). There were fierce debates about the effects that the integration of developing countries within global markets has, specifically on poor producers in these countries. Debates on defining *pro-poor growth* and *inclusive development* were evolving into two polarized positions (DFID 2004, World Bank 2008).

The first neoliberal position points out that the distribution of income between the world's people has become more equal over the past two decades and that the number of people living in extreme poverty has fallen (Wade 2004). They argue that such progress is in large part due to the increase in economic integration between countries, which has been caused by rising global efficiency in resource use, driven by countries and regions specializing and innovating in line with their comparative advantages. A key point here is that firms (of various sizes) increase their competitiveness through innovation (Porter 1996). Innovation is seen as a clear and explicit way for entrepreneurs to create wealth as they respond to the demands and opportunities of a globalizing economy (Porter 1990). Authors supporting this view point to evidence of the poverty-alleviating effects of trade and innovation (Bhagwati and Srinivasan 2002, Dollar and Kraay 2002) and foreign direct investment (FDI) (Klein et al. 2001). A key element of these arguments is that the benefits of economic growth and innovation accumulated by the wealthy will ultimately trickle down to the poor.

However, there are also plenty of arguments, developed from empirical macroeconomic evidence, to refute the neoliberal position. Kaplinsky (2005) argues that, while some gain from globalization, the very nature of global production and trading increases poverty and skews

income distribution. Stiglitz (2002) argues that globalization has had limited (and possibly negative) impacts on development, poverty and inequality. Many developing economies have seen growing disparities in income (Ravallion 2003). Nunnenkamp (2004) questions whether foreign direct investments make a contribution to achieving international development goals. Typically, poor people do not have access to the knowledge and assets that can help increase their competitiveness (Killick 2001). Nadvi (1997) notes that globalization can initiate differentiation or specialization among small business clusters in developing countries, modifying their internal social-economic structures and sometimes creating a few winners, while excluding many others. Those opposed to globalization in its current form argue that small producers have limited opportunities to innovate and rarely appropriate the value that they create, as a 'happy few' take advantage of most new opportunities. The debate about the effects of globalization on poverty continues today. Overall, it is safe to state that the net outcome of globalization in terms of poverty alleviation is often complex and almost always context-dependent and contested (Bardhan 2006).

Research questions

Against the theoretical considerations of these four key debates, I reflected back on my initial observations of the new economic dynamics unfolding in the small producers' clusters in the Red River Delta in Vietnam. I became particularly interested in whether and how poverty alleviation and the links between sustainable business and globalization were playing out at the micro level - within village-based small industries. Through innovation, these clusters of small producers were increasing their competitiveness. While this development was community-based, it raised the question of the effects of innovation and economic development on the poorer sections of the communities and the environment. Another question that arose was the extent to which poorer sections of the community were able to participate in the development process, share in the benefits and remedy any negative effects. Essentially I became interested in the extent, and the mechanisms through which, poor people could share the additional value creation and raise their incomes, through the application of practices that reflected the premises of sustainable business: people, planet and profit. I was interested in how these questions could be informed by, and related to, contemporary western debates on the broader societal impacts of innovation, ethical issues and sustainability; captured in the phrase *responsible innovation*² (NWO 2008, Douglas and

² Since October 2009 the research has been embedded in the 'responsible innovation' thematic program of the Dutch Organization of Scientific Research (<http://www.nwo.nl/mvi>). This program emphasizes the social relevance and practicability of research results by developing policy recommendations through consultation with a valorization panel.

Papadopoulos 2010, Ubois 2010), which describes situations where innovations are accompanied by concerns about their societal and environmental consequences. These considerations provided me with a framework to develop my central research question:

- *How to understand responsible innovation within poor small producers' clusters in Vietnam following the country's integration into the global economy?*

1.3 Research sub-questions

Through further literature reviews, I started to gain relevant theoretical insights and make associations but these were not always adequate and sometimes provided contradictory explanations to my research question. Most theoretical perspectives on such questions have been developed from macro-economic evidence from western economies and employ a narrow set of innovation variables. However, the issues involved seemed to be much more multifaceted and nuanced. Very little empirical work has been done on the clusters in Vietnam that could provide insights into what was happening on the ground. Winters (2004) argues the need for an alternative empirical approach that provides the required micro evidence to develop in-depth understanding and detailed insights of the ways in which economic development shape broader societal outcomes. It seemed appropriate to apply this micro level focus to Vietnamese villages in order to address my research interest.

The prominent role that new competitiveness plays in debates about globalization provided me with the idea and rationale to initially focus on innovation from an economic perspective. Innovation is seen as a clear and explicit way for entrepreneurs to increase competitiveness and create wealth as they respond to the demands and opportunities of a globalizing economy (Porter 1990). In the craft villages in Vietnam, the process and effects of new economic dynamics were very noticeable. They resembled the types of innovation processes and practices associated with the introduction of new know-how that leads to new technologies, or new products, or different ways of doing business - all ways to enlarge markets, create more value and turn that value into a higher revenue stream (Fagerberg 2004, Edquist 1997). This led me to my first research sub-question:

- *Do small producers in Vietnamese clusters innovate as a way to improve their economic performance and competitiveness?*

This question stresses the economic significance of innovation. However, this is only one dimension of the central research question. Innovation creates value but does not inevitably lead

to poverty alleviation, nor does it imply that poor people participate in the process (Thoburn 2004, Meschi 2009). Innovation processes and outcomes may bring new societal or environmental problems. The recognition of the need of *responsible innovation* has contributed to the development of new debates about new, more open, social and sustainable forms of innovation. However, there was no available conceptual basis to bridge the gap between the classical, technically and economically oriented research approaches and new ways of thinking about responsible innovation that stress social and sustainable aspects (Hirschmann and Mueller 2011).

These conceptual challenges were all very evident when looking at small producers' clusters in Vietnam. Innovations led to, or were accompanied by, a broad variety of social and environmental outcomes. In some villages pollution and an uneven distribution of benefits were directly visible consequences while in other situations the outcomes were not so clear or could take years to manifest themselves (as in the case with some health consequences following the use of chemicals in new production techniques). Researchers, villagers, government officials, innovators in the villages had different perceptions, interpreting and valuing the many environmental and social dimensions in different ways, which sometimes evolved over time. In some cases villagers accepted harmful outcomes as part of the price of the benefits of innovation. In other villages the outcomes were not accepted, were compensated for or gave rise to conflicts. Interestingly, there were also situations where innovators acknowledged their responsibility and resolved the problem themselves. This suggests that responsible innovation involves the innovators taking account of social, environmental and economic aspects in their behavior. This raises interesting questions about how actors participate or engage in these processes, how responsibility is acknowledged and how conflicts of interest are addressed and resolved. This resulted in the definition of the second research question:

– *How to conceptualize responsible innovation in the context of small producers in Vietnam?*

In some villages the new economic dynamics resulted in a harmonious resolution of environmental outcomes and the issue of wealth distribution - responsible innovation - while in other villages the environmental situation deteriorated and inequalities emerged or grew. This then leads to the third question which concerns the mechanics and dynamics of these societal processes. This question is relevant not only for academic theory but also for developing policies and procedures that could promote responsible innovation - elsewhere, both in Vietnam and other developing countries. My interest is not only in conceptualizing innovation and responsible innovation, but also extends towards developing practical policy solutions. In today's world the

societal relevance and practical applicability of academic research is considered very important, as reflected in a statement of the Dutch Organization for Scientific Research (NWO 2008) ‘anyone who still believes that socially relevant science belongs on a lower academic plane, is in for an intellectual reality check’³. These considerations led to the third research question:

- *What processes, conditions and systems contribute to responsible innovation and lead to more beneficial (socially and environmental) outcomes?*

I address these three research questions in separate studies that have been published as peer-reviewed book chapters, conference and working papers. These appear as the following chapters of this PhD thesis. Chapter 2, “Can small firms innovate? The case of clusters of small producers in northern Vietnam” addresses the first question. This was published in the book *Entrepreneurship, Innovation, and Economic Development* (Szirmai et al. 2011). Chapter 3 discusses the second research question. It draws on a conference paper “Conceptualizing responsible innovation in craft villages in Vietnam” initially presented at a NWO Responsible Innovation Conference in April 2011 and forthcoming as book chapter in *Responsible Innovation Volume 1: Innovative Solutions for Global Issues* (Van den Hoven et al.). The paper relates to another paper addressing the second question from a corporate social responsibility angle entitled “Resolving environmental and social conflicts - responsible innovation in small producers’ clusters in northern Vietnam”, chapter 4 of this thesis. It was originally published as a book chapter in *A stakeholder Approach to Corporate Social Responsibility: Pressures, conflicts, reconciliation* (Lindgreen and Kotler 2012). The third research question is addressed in chapter 5 “Understanding responsible innovation in small producers’ clusters in Vietnam through Actor Network Theory (ANT)”. This was initially presented at an ANT workshop at the London School of Economics and is under review for publication as a journal article at the time of writing this PhD thesis. I conclude the thesis with a summary and discussion of findings, theoretical reflections and implications for policy and the research agenda in chapter 6. In the remaining paragraphs of this introductory chapter, I will elaborate on the development of the research methodology and the validation of the quality of the research process and its outcomes.

1.4 Research approach

Before addressing the research questions it was necessary to define the research approach that would be utilized. Selecting a research approach involves explicitly reflecting on epistemological

³ http://www.nwo.nl/nwohome.nsf/pages/NWOP_8G5FQ3

principles, developing an overall research methodology and selecting data collection methods (Birks and Mills 2011). At each step I encountered several challenges.

Research methodology in the social sciences is directly linked to assumptions about the nature of knowledge and how it relates to notions of truth, belief and justification (Denzin and Lincoln 1998). In philosophical discourses this is referred to as epistemology, which *de facto* deals with skepticism about knowledge claims. In this research, I considered two epistemological stances: *positivism* which holds the view that there are ‘real’ tangible and objectively measurable consequences of innovations, such increased wealth or more pollution or inequality. Yet it was equally important that the research examined perceptions, human interactions, actors’ responsibilities and conflicts: phenomena that find expression as subjective perceptions and opinions which need to be dealt with through a *constructivism (post-modernism)*.

Doing empirical micro-level research in developing countries often raises conceptual challenges. Western economic notions and definitions often do not apply on the ground or manifest themselves differently (Bulmer and Warwick 1993). This was evident with the small producers’ clusters in Vietnam; the existing theories did not provide a fitting conceptualization or workable definition of innovation and responsible innovation. This made deductive reasoning, in the sense of developing a definition from a theoretical desk study and subsequently ‘testing’ cases in the field, impossible, (Stadler 2004). As an alternative, I opted for an inductive approach to conceptualizing and theory building. Inductive research is exploratory and qualitative by nature, and inherently employs multiple methods (Flick 1992).

The societal and multifaceted nature of the research questions involved incorporating several socio-economic disciplines (economics, business administration, management, sociology and anthropology) in the qualitative inquiry. While there is truth in the claim that “employing a variety of research disciplines offers considerable benefits” (Douglas 2008), there are significant differences in the associated research methodologies and data collection methods. These differences in research methodologies are influenced by their founding principles. For example economics often uses (panel) databases, sociology often utilizes surveys and anthropology draws on ethnography.

A last main challenge concerned data collection in the field. In most developing countries the statistical material and census figures about economic, physical and human conditions is limited and often unreliable (Bulmer and Warwick 1993). High-quality data on the condition of the poor is seldom available (Desai and Potter 2006). This is partly because the reality of the informal

economic context in which poor people live and work is complicated and hidden. It is a reality that cannot be revealed by standard data collection methods (Sumner and Tribe 2008). During my initial explorations in the field - in the villages in the Red River Delta - I encountered such problems. There was limited material about small producers' clusters, in official datasets, qualitative studies or even grey materials. Yet, collecting primary data in the informally organized world of these small businesses also posed several challenges. Terms such as innovation, R&D, innovation product, technology development and patents are not part of the everyday speech, reality and practice of small producers or villagers. The small producers do not keep business records, and standard survey practices will not reveal the sought-after information.

Others have struggled with similar realities and contexts in developing countries and some have proposed solutions to such challenges. Dick (2003) suggests an approach in which both understanding and the research process is shaped incrementally through an iterative process. Data analysis, interpretation and theory building occur at the same time as data collection. Dubois and Gadde (2002) introduced the notion of *systematic combing* which reflects the need of a flexible research methodology that involves researchers continuously going back and forth between different research activities and theory; simultaneously developing their understanding of theory and their empirical observations. The major strength of such a flexible methodology is that it allows for the identification and further exploration of unexpected (yet often) inter-related issues (Dubois and Gadde 2002). This approach reflects the systematized (and acknowledged) Grounded Theory approach (Glaser and Strauss 1967). This research process is not framed by an *a priori* theoretical framework but begins with empirical explorations that provide initial clues and ideas for conceptualization and building theory. Through an iterative process, involving theoretical associations and comparative analysis, the patterns and clues are gradually refined into a grounded theory on a step by step basis (Birks and Mills 2011).

Having considered the challenges and options, I selected a flexible grounded theory research methodology that was framed by the three research questions. This seemed to be the most appropriate approach and is elaborated over the following pages. This PhD project has been akin to a journey of exploration, more than a preconceived research plan that included predefined research methods and anticipated outcomes. However, it was a journey that was guided by a rigorous and iterative schedule of observations, use of theoretical ideas, theory development and new observations.

Research question 1

In concrete steps, the first research question ‘Do small producers innovate?’ involved the analysis of a number of examples of potential innovation in northern Vietnam and comparing them against a definition of innovation developed from the literature. Developing such a definition involved trying to combine several different perspectives and schools of thought about innovation in a way that could be operationalized in Vietnam. For instance, Dosi (1988), Nelson and Winter (1982) and Fagerberg (2004) approach innovation from a fundamental economic perspective. Freeman (1995), Lundvall (1992) and Edquist (1997) advance a more practical view and discuss how innovation flourishes in a system of formal supporting institutions. The business management literature sees innovation as a business strategy and competitiveness challenge which involves advanced technology, radical inventions, R&D expenditures, management plans and patents (OECD 2005, Porter 1990).

However, the informally organized small producers in Vietnam did not fit any of these patterns. They introduced new things on the spot by (*learning by doing*) and informally exchanged their ideas with no strategic plans or formal institution in the background to support innovation. Through systematic combining I constructed and operationalized an innovation assessment instrument which contained key elements from different schools, further explained in chapter 2. I paid particular attention to selecting criteria that were relevant and practically measurable in the reality of informally organized clusters. With this innovation assessment instrument I was able to analyze possible cases of innovation within small producers’ clusters and distinguish cases of innovation from those that were not.

Research question 2

I approached the question of how to conceptualize responsible innovation through a range of social, technical and human disciplines, including: environmental sciences, sustainable business, poverty, social development, business ethics, behavioral economics and technology. I initially tried to develop a checklist of indicators that would be appropriate to the context of Vietnamese small producers: a modernist and positivist approach in epistemological terms. However, ambiguities arose when trying to assess what was relevant, what indicators to use and how to value the many environmental and social outcomes.

I also found that the villages differed a lot in terms of their social cohesion and their perceptions of innovations. This led me to begin to conceptualize responsible innovation by focusing on conflicts caused by innovations in the villages and how innovators and other stakeholders

responded to these (i.e. by acknowledging responsibility or not). This involved analyzing perceptions or social constructs, which in epistemological terms could be described as a post-modernist and constructivist approach. By analyzing and comparing the various cases through the grounded theory approach, I identified different patterns and conceptualized the societal processes towards responsible innovation into a model. The key elements here were the emergence of conflicts and innovators acknowledging their responsibility for the unforeseen consequences of their innovations. This model enabled me to distinguish cases in the 'responsible innovation zone' with cases that were not.

Research question 3

The last question involved understanding and explaining why one small producers' cluster in Vietnam ended up in a situation of responsible innovation while another did not. The methodological challenge involved here was to consider responsible innovation as a societal networking process of human interactions. The process, under certain conditions, steers innovators to acknowledge responsibility in conflict resolution. This involved combining two epistemological challenges: perceptions, human interactions and conflict resolution relate to constructivism, whereas unforeseen material consequences of innovation suggest a more positivist 'real' world view.

The literature on innovation systems, institutional economics, conflict resolution and social learning, which I drew on heavily for addressing the first two research questions, did not provide an analytical framework for uniting these two epistemological perspectives. Actor Network Theory (ANT) did, however, provide a useful way forward. This approach conceptualizes the social interactions that occur in networks where human and material elements are interwoven (Callon 1986, Law 1992, Latour 2005). According to Law (2007) the ANT approach is not a theory in the sense that it can be tested or has explanatory power. Rather it adopts an in-depth analysis into how human interactions are negotiated and shaped, while acknowledging the agency of non-human actors. It is a descriptive tool and provides a lens to see 'how' relations and networks are assembled. Central to ANT is the concept of translation through which actors attempt to create a central network in which all the actors agree that the network is worth building and defending.

Typically, the creation of an actor network happens through a series of translation moments (Latour 1987, Callon 1986) a term that describes the process of one actor becoming established as the focal point and the subsequent steps of assigning roles and identities to the actors in the

network (and them accepting these). Eventually, this can lead to the establishment of a relatively stable network in which the roles, interests and motivations of the actors are mutually understood. I used ANT as an analytical tool to describe and understand the occurrence of responsible innovation in one cluster but not in another. These contrasting cases allowed me to compare the actor networks, identify patterns in network creation and eventually understand and explain the factors and conditions of the societal processes that lead towards responsible innovation.

1.5 Research validity

Qualitative research methods were employed to address these three research sub-questions. The naturalistic approach was highly appropriate to the pursuit of conceptualizing innovation and responsible innovation in this context, particularly because many actors were involved in interacting with each other. While the validity of qualitative research has sometimes been questioned there are no straightforward tests or frameworks for quality measurement (Patton 2002). However, a variety of criteria have been proposed for demonstrating the legitimacy and trustworthiness of qualitative research (Denzin and Lincoln 1998, Lincoln and Guba 1985). Sumner and Tribe (2008) suggested the following main criteria for the evaluation of qualitative research: concept validity, internal and external validity and objectivity. I familiarized myself with all these validity issues and paid particular attention to them during the research process - as described below.

Concept validity

Fuzziness is a frequently recurring issue in the social sciences. Once a definition or construct has been proposed, it must be validated as a theoretical concept or as fundamental unit of thought with a meaningful role within existing theoretical systems (Zaltman et al. 1973). Concept validity thus refers to the adequacy of the definition of a concept and how a concept is embedded, or can be traced back, in a network of theoretical associations (Dowling 1986). Conceptual fuzziness was particularly an issue in my research, as many of the terms I was working with (e.g. sustainable development, responsible innovation and poverty alleviation) are very broadly applied and have multiple definitions. While working with Vietnamese small producers, I became aware that the selection of a certain perspective from theory might lead to hidden and critical elements in the field being overlooked. *Systematic combining* (described above) proved to be an effective way of avoiding this. I first did a broad investigation of the literature sources, not

excluding unfamiliar or illogical angles. Then with the help of field work observations - in an iterative process - I identified and selected relevant theoretical elements for constructing and narrowing down my first (outline) conceptualizations of innovation and responsible innovation. These initial concepts enabled me to further explore and analyze the relevant theory and move towards developing a more focused and precise conceptualization during subsequent rounds of fieldwork and theory analysis (Birks and Mills 2011).

Internal validity

Internal validity concerns whether a study “investigated what it claimed to investigate” (Ray 2003). Sumner and Tribe (2008) view internal validity as critical to the credibility of the research and the extent to which a set of data and findings are believable. Internal validity concerns the explicit correspondence, coherence and consistency between the data, interpretation and the writing-up. Benz and Newman (1998) have proposed several strategies for maintaining internal validity, including evaluating the reliability and quality of the data and the internal line of reasoning towards conclusions. I describe below how I sought to maintain internal validity.

The data collection in the field took place during a series of 6 field work visits in between 2007 and 2012. I drew on my earlier research and project experiences in the Red River Delta in which I had developed an understanding of small business clusters and poverty. I gained further experience about the social and cultural *do's and don'ts* of working in these contexts. I learned basic Vietnamese and how to drive a motor cycle. My contacts and Vietnamese fellow researchers in the country helped me with introductions in the villages. I found that many of these practicalities were confirmed in the literature on logistics and practice (Murray and Overton 2003).

Once in the field, I started carrying out observations in the villages through, what is sometimes referred to as, passive presence. I explored, observed and took pictures of the village, the small businesses, the people and their activities. As a stranger in the village taking pictures I did not experience any problems or hostility; quite the opposite, small producers often invited me to have a look at their home-based business. After the initial observations, documented through notes and pictures, I reviewed and reflected on further questions for the open-ended interviews that would follow. On subsequent days, I carried out in-depth interviews in the villages with the help of a Vietnamese research colleague who acted as an interpreter. We took a low profile when approaching and talking to small producers, innovators, villagers, clients, local administrators, suppliers and buyers. We started with small talk before mentioning our research interest. Once it

seemed that people were open and willing to talk with us, we sat down somewhere and further introduced and discussed our questions. Interviewees were free to talk about what they found relevant, even if it had nothing to do with our inquiry. The interviews usually took an hour or more. Usually once the small producers felt comfortable, they were eager to tell their story. The interpreter did not provide a full translation of the conversation but just of the main threads and, with my basic Vietnamese, I could understand the broad lines of the discussion. This maintained the flow of the interview. I took notes in an 'old school' notebook and recorded all the interviews on a pocket MP3 recorder. The interviews were later literally transcribed by the Vietnamese research colleague, thereby minimizing the effects of interference or biased interpretations. This research approach closely followed the advice of Scheyvens and Storey (2003) to stay aware of Western ethnocentrism and values and to focus on and respect local social routines. This informal knowledge gathering process yielded understandings that could not have been obtained through survey research methods.

Another essential aspect of internal validation is to cross-check information and conclusions, a process referred to as triangulation and which is applied through the use of multiple sources of information (Flick 1992). This strategy aims to add rigor, breadth, complexity, richness and depth to the inquiry. I employed two triangulation techniques. One involved comparing data from different sources including observations, interviews, resources person, surveys and grey materials. The second was to critically reflect on whether I had collected sufficient data, of sufficiently good quality, to justify the interpretations and conclusions I was making. In qualitative research there are no standards about the number of people one should interview or how much observational material one should collect (Birnacki and Waldorf 1981). My strategy was to continue observing and interviewing until no new information on a topic emerged. I employed a snowball, or chain referral, sampling approach, with interviewees recommending other villagers who they thought would possess some knowledge or characteristic that would be of interest to my research (Birnacki and Waldorf 1981). The data collection and interpretation were also done as an iterative process. I organized and arranged the raw empirical material - photos, observations, recorded interviews and transcriptions - by writing memos of my thoughts, defining, categorizing and coding data and constructing meanings - all in line with the view of the working procedures of grounded theory (Charmaz 2003). I went back to the villages several times to double-check and confirm the construction of the conceptualizations and carried out additional interviews. The series of working visits, spaced over a period of 5 years, increased my understanding of the dynamic processes occurring in the villages. Time and again, I witnessed changes in the villages which were essential in construction of the societal processes. Others (e.g.

Massey et al. 1987) affirm the importance of having a research strategy that can secure valid and reliable data at many points in space and time when studying dynamic social processes.

External validity

External validity refers to the replicability of any piece of research. In qualitative methodologies it is important that data collection and the line of reasoning that leads towards the conclusions can be validated by external reviewers (Ray 2003). Transparency in the line of reasoning is essential. Churchill et al. (1998) suggests that this can be judged by the *coherence* criterion; the coherence between the raw data and the identified patterns and conclusions. The cases should be described in a common format that facilitates identification of the patterns described. To this end I used data from the different cases to construct matrixes and I systematically explained the development of these patterns, making the process transparent and allowing the reader to follow my line of reasoning. I recorded this process through an audit trail and retraceable data storage (Morse et al. 2002). I systematically stored all the rough and generated data, the MP3 files of the interviews, my memos and successive versions of the articles. Moreover, I developed several systematic routines for validating and verifying my argumentation in interactions with several audiences. In line with Huberman and Miles (2002), I checked whether academics from similar and other disciplines and methodological backgrounds agreed with my line of reasoning and would have drawn similar conclusions.

During the fieldwork, I shared and verified my initial coding of the data with Vietnamese research counterparts and colleagues directly involved in the research project. I had in-depth talks with Vietnamese experts who were not directly involved in the research but who would understand it. I checked my line of reasoning in monthly meetings with my PhD supervisors and the co-authors of the four articles. During these meetings we reviewed alternative interpretations until we arrived at the most logical argumentation. I presented work in progress and the articles at various academic workshops and conferences. The four articles have successfully passed thorough processes of academic peer-review. Creswell and Miller (2000) stress the importance of seeking the assistance of peer debriefers in terms of adding credibility to a study

Generalizability - also referred to as transferability - is another important aspect of external validity. Will the insights hold true in other contexts? (Lincoln and Guba 1986, Sumner and Tribe 2008) This addresses the likelihood that research results can be transferred to situations with similar parameters, populations and characteristics (Lincoln and Guba 1985, Benz and Newman 1998). There are strong indications that the conceptualizations about innovation and responsible

innovation are relevant to other contexts. Whilst in Vietnam, I usually took the opportunity to check the conceptualizations in other contexts in other villages in northern Vietnam. It appeared that these held true for many craft villages with a similar economic structure, ways of cooperation and societal dynamics. This observation is further supported by various literature resources that explore similar links between dynamic local clusters and globalization (e.g. Schmitz 1999, Szirmai et al. 2011, Caniëls and Romijn 2003). These studies also report on emerging societal (labor conditions and wealth distribution) and environmental problems. Lastly, this PhD research project was continually monitored by a valorization panel of policy makers and practitioners. On various occasions, the panel members confirmed that the societal processes and issues that I described were very common in developing countries in Asia and Africa. Thus there are substantial indications that the researched cases are representative of many other clusters of small producers in developing countries that (potentially) participate in and benefit from new economic dynamism linked to globalization.

Objectivity

Demonstrating objectivity is critical for any type of research. However, no research is value free (Perl and Noldon 2000). Every researcher has some personal motives, issues or bias toward the subject being studied. In qualitative research there is a term for this: *confirmability*. This describes the extent to which the researcher has controlled the intrusion of his/her personal values (Sumner and Tribe 2008).

In this research, I acknowledge I also have biases. In my past work in Vietnam and other developing countries, I was often confronted with the claims and beliefs that poor producers in small business are passive and in need of help. I found such statements often did not reflect what I had seen in the field and appeared to be patronizing. Throughout my research, there was an underlying temptation to write about the strengths of small producers: their risk taking, creativity and inventiveness. I also recognize my resistance and even skepticism towards the claims of governments or donors that their efforts to structure and formalize economic and societal processes are the most promising (or even a positive) way to steer development processes. In the communities where I have worked the informal interactions and cooperation among the villagers were central in creating trust among themselves and confidence in their efforts to innovate. Despite these ingrained biases, I have pursued a transparent way of doing research, which hopefully will enable my readers to judge the objectivity of my PhD thesis by themselves.

In this introduction I have described how my research interest evolved, and how the further development of the research questions and the research implementation materialized. This provides a theoretical and geographical context to the empirical research set out in subsequent chapters. In addition it sets out to discuss and examine the overarching empirical and epistemological challenges and the problems of ‘fuzziness’ and conceptual clarity. The thesis concludes with a summary of the findings from the four articles, some theoretical reflections and a discussion of their implications for policy.

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Chapter 2

CAN SMALL FIRMS INNOVATE? THE CASE OF CLUSTERS OF SMALL PRODUCERS IN NORTHERN VIETNAM

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2.1 Introduction

Many economists, politicians and economic actors consider innovation as the key to achieving competitiveness in today's globalized world. Although this viewpoint is generally accepted in economic circles, the question remains whether innovation is feasible and relevant for any firm in any economic reality. Is innovation within reach and a way to pursue for small, medium as well as large firms, and those in developed and developing economies?

In current debates about globalization and competitiveness, innovation is often represented as providing opportunities and conditions for developing countries to participate in the world economy. Innovation is seen as a potential way in which low-income countries can strengthen their firms' competitive position within global value chains (Gereffi et al. 2005, Kaplinsky 2000). Schmitz (1999) specifically refers to cases of clusters of small businesses in less developed countries that 'have broken into international markets'. Was this achievement the result of innovation?

Other authors argue that innovation is not a feasible way for small producers in the informal sector in low-income countries to increase competitiveness. They argue that these producers will only play a limited role in formal economies, international markets and globalization. Lewis's dual sector model of development (1954) included the *trickle down* theory which assumes that economic growth and technology flow down from the wealthy at the top to the poor at the bottom. The appropriate technology approach (Schumacher 1973) urged Western development agencies to design simple technologies that would help poor small producers in low-income countries to escape from poverty. The indigenous knowledge approach takes the position that local knowledge and local markets should be tapped into. None of these approaches take local

capacity for innovation into account. Rather they see such producers as being locked into patterns of traditional and indigenous ways of production. The Global Competitiveness Report 2006-7 cited in Caniëls and Romijn (2007) reflects a similar view: “innovation is something that is only significantly undertaken once a country has reached a considerable level of economic advancement”. According to the report, innovation is not a particularly relevant, important or useful activity for the great majority of firms in low and medium income countries.

This study questions this assumption and analyses examples which suggest that innovation is a potential avenue for small producers in low-income countries. For instance in northern Vietnam, several clusters of small producers engaged in traditional crafts have introduced new technologies, new products and applied new business practices in recent years, expanding their sales on domestic and international markets. Conventional economic thought assumes that such traditional crafts will eventually disappear as a result of the modernization of these countries’ economies, based on the belief that traditional production technologies are conventional and backward and not suited to global market conditions. However, the Vietnamese examples suggest otherwise in this chapter and I explore the extent to which these successes are the result of innovation and, if so, whether this has any broader implications.

If these examples from Vietnam are indeed innovation this would provide additional support for further research into the potential role of innovation in poor communities. To do so, it is informative to review the types of innovation, their features, similarities, organization and how they emerge. Such insights can provide the basis for further theory building on the extent and significance of innovation in low-income countries.

However, before doing so, there is a methodological challenge that first needs to be addressed. How do we know whether something is actually an innovation? In economic theory today innovation is a very broad concept, largely defined in terms of Western economies. Many of those involved in studying innovation interpret its meaning in different ways. Moreover, the term innovation is not value free: innovation is ‘hot’ and virtually all social actors in western economies today, whether they be firms, public services or educational institutions, claim to be ‘innovative’. Can contemporary economic theory, with its existing concepts and definitions provide a suitable instrument for assessing innovation in clusters of small producers in developing countries?

2.2 Defining innovation: the theoretical framework

Many authors have addressed the issue of defining innovation (Rogers 1998, Read 2000, Tether 2003, Szmytkowski 2005) although most acknowledge that defining innovation precisely is problematic. The difficulty is that innovation is an activity that is more complex than it at first appears; 'It is a serious mistake to treat an innovation as if it were a well-defined homogeneous thing that could be identified as entering the economy at a precise date' (Kline and Rosenberg 1986). Despite much research into innovation in many fields, no single discipline has succeeded in uniting the fragmented thinking into one consistent umbrella theory, providing commonly agreed definitions and theoretical concepts.

The economic exploration of innovation started at the beginning of the 20th Century when neo-classical growth theories (Harrod 1939, Domar, 1946) and production function models of Solow (1956) and Swan (1956) were unable to explain the actual dynamics of economic growth (Amable 1994). At that time, innovation was considered to be an exogenous variable, by nature a 'black box' (Rosenberg 1982). Technical change and innovation was outside the competence of classical economists and was seen as a domain for engineers and scientists (Freeman 1994).

Veblen (1904) was one of the first authors to challenge this position by stressing that the development of new technology is not an exogenous force, but rather a set of material, economic and social relationships shaped by businessmen, managers and workers. Schumpeter (1934) incorporated and explicitly explained the term *innovation* recognizing the direct link that exists between innovative activity and the dynamics of economic growth. He departed from the idea of an economic equilibrium theory and argued that innovator-entrepreneurs continuously changed the existing equilibrium by introducing newness (Brusoni et al. 2006). Schumpeter defined innovation as "the introduction of new or improved products, production techniques, and organization structures as well the discovery of new markets and the use of new input factors".

The '70s and '80s saw an increasing recognition of the difficulties of equilibrium theories, which assumed perfectly rational agents working within a static economic context (Dosi and Nelson 1994). As an alternative, Nelson and Winter (1977, 1982) proposed that economic growth through innovation could be understood as an evolutionary process, which is the endogenous outcome of an economic system (Romer 1994). They defined innovation broadly "as a portmanteau to cover the wide range of variegated processes by which man's technologies evolve over time". Dosi (1988) emphasized the process and learning element when defining

innovation, which involved: "... the search for, and the discovery, experimentation, development, imitation and adoption of new products, new processes and new organizational set-ups". Today, most economic literature on innovation still builds on the assumption that 'innovation is a process' (Lundvall 1992, Edquist 1997, Carayannis et al. 2003, Fagerberg 2004, Szmytkowski 2005).

In the '90s, Lundvall (1992), Edquist (1997) and Freeman and Soete (2007) argued that innovation should be analyzed, not only in terms of a process of new and better techniques, but rather as a co-evolutionary mechanism or system of technologies, organizations and institutions. Freeman (1987) and Lundvall (1992) advanced the innovation system theory arguing that the innovation process takes place in a network of public and private sectors institutions. Research in the field of economic geography further developed the learning dimension of the innovation systems approach applying it to describe learning-based regional production systems, also known as *learning regions* (Rutten and Boekema 2007).

In the mid-'90s, attention to innovation in economic theory expanded enormously (Fagerberg and Verspagen 2006). Researchers from various economic backgrounds have increasingly discussed and analyzed innovation in the context of globalization, acknowledging that modern national economies are increasingly dominated by competitive global markets and growing dependency on international economic systems (Preissl and Solimene 2003). The notion that innovation ensures competitiveness through the creation of value has been important since Schumpeter. Porter (1990) again underlined the value creation and competitiveness aspects of innovation in his theory on new competitiveness. Firms create competitive advantage by perceiving or discovering new and better ways to compete in and bringing them to market, which is, according to Porter (1990), the ultimate act of innovation. Value creation, profitability and commercialization are key aspects of innovation in virtually all the definitions of innovation since Schumpeter (Krasner 1982, Edquist 1997, Rogers 1998, Walsh 2002, Fagerberg 2004), and are the features that distinguish innovation from an invention. This implies that an innovation is by definition successful: innovation is the successful exploitation of ideas.

The theory and definitions discussed above repeatedly consider newness, value creation and process as the key-elements of innovation. Thus innovation can legitimately be summarized as the process of introducing something new that creates value. Today, innovation and entrepreneurship are at the forefront of academic debates in economics, business administration and other related fields of study; they seem clearly interrelated and the role of the entrepreneur can only be understood if it is placed against the background of the theory of innovation.

Hagedoorn (1996) referring to Schumpeter (1934) even states that the entrepreneur is the personification of innovation.

The three key elements of the innovation definition are still too broad to actually assess in practice whether something is an innovation. Further operationalization is necessary to assess whether something qualifies as *new*, whether this something new *creates value*, and whether the introduction of newness involves a *process*.

2.3 An instrument for assessing innovation

There is substantial literature and quite a few approaches for assessing innovation. Most of the approaches measure either the quantitative *outputs* of innovation (e.g. the number of patents obtained or the share of new products in total sales), or the *inputs* into the innovation process, for example R&D expenditure or staff or investment in innovation management (Freeman and Soete 2007). These approaches however cannot be used to measure the multi-dimensional definition of innovation, especially within clusters of informal small producers in developing countries, where it is generally difficult to obtain reliable quantitative business data. To address such a situation we need an assessment instrument that captures the multidimensional character of innovation and one that is context-independent. To do so, the study proposes a generic assessment instrument that uses a set of criteria and operationalization that are derived from the literature. This instrument also differentiates between the three key elements of innovation – newness, value creation and process.

Newness criteria

Johannessen et al. (2001) observed that there is no agreement about the nature of newness. Yet, being a key element within virtually all definitions of innovation, some agreed criteria for newness are essential in identifying innovation.

Schumpeter (1934) defined six different types of innovative activity: new products, new services, new methods of production, opening new markets, new sources of supply and new ways of organization. Johannessen et al. (2001) and Kaplinsky and Morris (2001) and reshaped the typology as follows: (i) process innovation - aiming at improving the efficiency of transforming inputs into outputs; (ii) product innovation leading to better quality, lower price and/or more differentiated products, and; (iii) business practice innovation implying new ways of doing business and attracting new clients. Kaplinsky and Morris (2001) include a further two categories

which involve taking over the functions of other actors in the value chain or switching to other chains altogether: (iv) functional innovations - assuming responsibility for new activities in the value chain, such as design, marketing and logistics; and a (v) inter-chain innovations moving to new and profitable chains.

The next criterion concerns the application of the term newness. Chattopadhyay and Srivastava (2007) describe newness as what we have not encountered before. Newness exists where something is different from the past. There is a point in time that marks the arrival of newness. Johannessen et al. (2001) stresses that newness is a relative, rather than an absolute, concept and here the question ‘new to whom?’ becomes important; since what is new to one firm could already exist somewhere else. Kotabe and Swan (1995) argued that innovation can be investigated in terms of both newness to the firm and newness to the market or world. The newness of something can only be assessed when the unit of analysis has been determined, for instance a firm or a cluster.

The next question is how different or how new must something be to qualify as new? Most innovation studies acknowledge a distinction between incremental and radical innovations. The importance of incremental step-by-step innovation is often emphasized and much innovation is quite mundane, being incremental rather than radical (Freeman 1994). Much innovation depends more on an aggregation of small insights and advances through ‘learning by doing’ rather than on major technological inventions (Carayannis et al. 2003).

Since new is relative to the unit of analysis, it is not possible to set an absolute scale of newness or a framework of reference. This inherent subjectivity also implies that the newness should have a particular meaning to the people concerned. According to Porter (1990) innovation is the result of an unusual effort and doing something exceptional. People involved in innovating, whether producers or users - experience and acknowledge that the newness is a breakthrough that is followed by ‘adapters’.

From these considerations, the following three criteria for newness could be concluded.

Criterion	Operationalization
1.1: The new ‘something’ (newness) concerns one of the types of innovation agreed on in the literature (Schumpeter 1934, Kaplinsky and Morris 2001, Johannessen et al. 2001).	Newness can be classified either in terms of a new product, or process, or concept/ practice, or function, or opening up a new market, or new sources of supply, or new ways of organization.

1.2: The newness introduced represents a difference from the past within the specified unit of analysis (Chattopadhyay and Srivastava 2007, Johannessen et al. 2001, Kotabe and Swan 1995).	A point in time can be determined/identified that distinguishes between the times where the ‘something new’ did and did not exist in the unit of analysis.
1.3: The producers and users perceive and acknowledge the newness as a breakthrough; a major achievement or success that permits further progress (Freeman 1994, Porter 1990).	It can be demonstrated that a few started to introduce the newness, to be later followed by others (early innovators -> adopters) on a larger scale.

Value creation criteria

The second element of the definition of innovation concerns value creation. According to Porter (1990), innovation generates value when a firm provides comparable value to buyers but performs its activities more efficiently through lower costs (cost advantage) or when a firm performs its activities in a unique way, thus creating greater buyer value and attracting a premium price (differentiation advantage). In other words, the newness can either lead to lower input costs or higher sales revenues.

In addition to value creation within the firm, the literature on innovation also considers the impact of innovation to have a critical influence on the firm’s competitive advantage. Porter (1990) stresses the links between value creation and competitive advantage. Through innovations, firms can stay one step ahead of the competition. So another indicator of value creation is whether a firm is advancing its competitive position in the market (whether local, national or international) or able to enter into new, more profitable, markets.

Two criteria for value creation could be defined as follows.

Criterion	Operationalization
2.1: More value is added by the firm either through lower input costs or higher sales revenues (Porter 1985).	A causal explanation can be attributed between the introduction of the newness and lower input costs or higher sales revenues.
2.2: More value is generated by improving advancing the unit of analysis’ competitive position in local, national or international markets (Porter 1985, 1990).	Market expansion and , entry into new markets can be demonstrated after the introduction of the newness.

Innovation process criteria

Initially, innovation was viewed as a one-dimensional 'linear process' proceeding sequentially through relatively independent steps: from research to marketing. This view overlooked the importance of feedback loops between research, technological knowledge and the market. Dosi (1988) suggests that the essential steps include the discovery, experimentation, development, imitation and adoption of something new. Tether (2003) sees the innovation process as typically starting with the generation of a creative idea or an invention, which is then brought to life through a research/test phase and an implementation phase: making an investment is an essential part of the process. In sum, innovation is an unstructured process that follows a general pattern of three component elements: (i) creativity, ideas or invention as solutions for the operation of the business; (ii) developing and testing a pilot, prototype, a trial, and; (iii) application, investment, implementation and commercialization.

Many authors confirm that innovation is a learning process. Dosi (1988) observed that a significant amount of innovations and improvements originate from *learning by doing* and *learning by using*. Mytelka and Smith (2001) observes that innovation research today, has re-conceptualized the firm as a learning organization focused on knowledge and learning. Learning in an innovation process implies that an original idea is further improved in a cycle of loops, feedbacks and checks in the three-step process described in criterion 3.1. Learning can be compared with walking through another cycle of these 3 elements. Looking more closely at how learning takes place, Lundvall (1992), Edquist (1997) and Freeman (1995) advanced the theory that the process of innovation is characterized by interactive learning within an innovation system. It provides the interaction between the actors necessary for effective innovation.

From these considerations, the following three criteria for process can be identified.

Criterion	Operationalization
3.1: The introduction of the newness is typically an unstructured process of three component elements (Nelson and Winter 1982, Dosi and Nelson 1994, Kline and Rosenberg 1986, Tether 2003).	Within the unit of analysis, three component elements of the process can be identified: (i) creativity and the search for ideas ; (ii) development and testing, and; (iii) application, implementation, investment, and commercialization.
3.2: The introduction of newness is typically a learning process within the unit of analysis (Dosi 1988, Mytelka and Smith 2001).	Feedback during the process can be demonstrated to improve or build upon the original idea and instigates another cycle of the 3 step-process described in criterion 3.1.

3.3: The innovation process is characterized by interaction in the environment of the unit of analysis (Freeman 1995, Edquist 1997, Lundvall 1992).

A causal attribution can be made between the introduction of newness and interactions beyond the unit of analysis.

The instrument for assessing innovation proposed here, therefore involves testing eight criteria for a selected unit of analysis. Only if all criteria are met, can the presence of innovation as a process of introducing something new that creates value be confirmed.

2.4 Analyzing Vietnamese examples of new business dynamics

In 1986, Vietnam initiated an economic reform campaign (*Doi Moi*) setting in motion a transition process from a centrally planned to a free-market economy. At that time, Vietnam was listed among the poorest countries in the world with per capita GDP of \$203. Since *Doi Moi*, the Vietnamese economy has experienced a considerable growth as shown in table 2.1. GDP growth averaged 7.8 % in the period 1995 - 2008 and per capita GDP has quadrupled since the reforms. The economic structure of Vietnam has changed significantly, with agriculture declining in importance from 40.8 percent of GDP in 1989 to 20.1 percent in 2006. Industry has gained proportionally in importance, its contribution to GDP increased of 22.9 percent in 1989 to 40.1 percent in 2006. During this period, the contribution of the services sector remained virtually unchanged at 36 - 38 percent of GDP.

Table 2.1: Selected economic growth indicators for Vietnam, 1995 - 2008.

	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
GDP growth (%) *	9.5	6.8	6.9	7.1	7.3	7.8	8.4	8.2	8.5	7.3
GDP (billions US\$) **)	20.7	31.1	32.5	35.1	39.6	45.5	53.0	60.9	70.0	81.3
GDP per capita (US\$) **)	288	401	413	440	489	555	637	722	818	937
Population (persons millions)	71.9	77.6	78.6	79.7	80.8	82.0	83.2	84.4	85.5	86.7

*) constant prices

**) current prices

Source: International Monetary Fund (IMF), World Economic Outlook Database, April 2008.

Micro, small and medium-sized enterprises (SMEs⁴) play a significant role in Vietnam's economy in terms of number of businesses, employment creation (table 2.2) and contribution to GDP. Many are engaged in retail trade, manufacturing, hospitality and transportation and a number of small producers are located in clusters, similar to the cases selected as subjects for this study.

Table 2.2: Business establishments and employment in Vietnam (2002).

	SME			Sub- Total	Large SE	Total
	Micro	Small	Medium			
<i>Establishments:</i>						
- Number of businesses (x 1,000)	2,660	46.7	11	2,718	2.5	2,720
- Percentage of all establishments (%)	97.8	1.7	0.4	99.9	0.09	100
<i>Employment:</i>						
- Employment (1,000)	4,375	887	1,221	6,483	1,909	8,392
- Percentage of persons engaged (%)	52.1	10.5	14.5	77.3	22.7	100
<i>Average Size of Establishments:</i>						
- Persons engaged per establishment	1.6	19	112	2.4	773	3

Source: GSO Establishments Census, 2002, classified as per tentative size groupings.

Recognizing the importance of small and medium enterprises in economic development, the Vietnamese government is paying special attention to promoting and supporting the development of micro- and household-based crafts businesses in the country. The new law on business enterprises and firms is aimed at promoting all kind of businesses and economic sectors, creating equal conditions for everyone in business activities. SMEs and in particular non-farm household enterprises are acknowledged to be important for their potential to absorb a growing labor force, to slow down regional and rural–urban migration and to promote a more equitable distribution of income (Oostendorp 2009).

Despite the economic advances during the last twenty year of economic reform, the formal Vietnamese private sector, and SMEs in particular, is not yet sufficiently competitive in a global context (Nguyen et al. 2008). There are innovation and industrial policies in place that have established specific support institutions for enterprises in technologically advanced industries, similar to western innovation policy approaches. However, at an international policy forum in

⁴ SMEs have been divided into 3 sub-groups: (i) micro enterprises: engaging up to 9 employees; (ii) small enterprises: engaging up to 49 employees; (iii) medium size enterprises: engaging up to 299 employees.

2006⁵ Vietnam was positioned among the group of countries that are in the early stages of introducing innovation programs which are about technology adoption and technology upgrading.

2.5 Research methodology

Since 1997, one of the authors of this chapter has been involved in training and research projects for household and SME development in northern Vietnam. Typically, economic activities in this area revolve around agriculture and related activities, and several villages have specialized in traditional crafts and small industries such as wood, silk, ceramics, noodles, etc. Small producers in such villages often cooperate to some degree, matching Schmitz's definition (1999) of a cluster; 'the geographical and sectoral concentration of enterprises'.

Surveys showed the existence of several dynamic clusters that involved new ways of production, new products and new business practices all of which enabled small producers to expand their markets. A variety of sources including development NGOs, the media tourist agencies and state economic agencies have all published reports with similar findings. The last reports triggered our first explorations (in 2006) to identify examples of clusters of small producers. Initial data collection began with listing the craft villages and clusters of small producers through scanning various secondary resources: project reports, newspaper articles, internet sites and official and quasi-official documents and a variety of resource persons. From this initial list a set of relevant clusters was short-listed for further exploration, with the first field visits being carried out to more closely examine newness through observation and interviews with small producers so as to get a 'feel' for the new business dynamics atmosphere. This initial screening process led to the following clusters being selected for analysis:

1. Bat Trang: A traditional ceramics village in the Red River Delta in northern Vietnam, 15 km east of Hanoi. The village has 1,020 micro and small household enterprises⁶ producing ceramics. Recently many small producers in the cluster introduced a new technology - a Liquefied Petroleum Gas (LPG) kiln - for baking ceramics and they have since expanded their market due to improved quality and increased production volume.

⁵ 'Innovation Policies and Institutions for the Knowledge Economy' Incheon Education and Science Research Institute, Seoul, Republic of Korea, November 29 - December 1, 2006.

⁶ Micro and small entrepreneurs in Bat Trang typically have a home-based workshop, with between 1-5 (micro) or 5-20 (small) employees, often family members employed under informal contracts.

2. Duong Lieu: A cassava starch and noodle-producing village in the Red River Delta, 30 km southwest of Hanoi. In the past 5 years, 20 small producer households switched from producing cassava noodles to a new end product; children's sweets made from cassava. They now sell to more profitable outlet channels, such as supermarkets in Vietnam.
3. Van Phuc: A traditional silk craft village in Ha Tay province, 10 km west of Hanoi where a cluster of 785 small, home-based, producers is engaged in silk weaving, tailoring and sales. Over the past 10 years, many of these small producers have established retail shops in the village's main street, offering a much broader range of products.
4. In Quang Hoa district in Thanh Hoa province, 225 km southwest of Hanoi, a development NGO started a technology transfer project in 2006 and established pre-processing workshops for small bamboo producers. Instead of selling unprocessed bamboo culms, small producers now cut, split and smooth bamboo into slats for floor parts supplied to intermediaries of IKEA for the European market.

In May 2007, a second round of field-work took place. In-depth data collection focused on the assessment criteria through visual observations of the households, the workshops, the products, the tools and machines and in-depth interviews with small producers, value chain suppliers and buyers, and local administration. After having collected sufficient empirical material for assessing the criteria, the data were further processed into case descriptions organized according to newness, value creation and process, as described below. The case studies provided the basis for interpreting data for each criterion in the matrix presented at the end of this chapter. Finally, in January 2008, a third field-work trip was held to verify the case descriptions. To provide insight into the trail of evidence, key quotes from the interviewees are listed in annex A of this chapter.

2.6 Case descriptions

Bat Trang ceramics village

Newness

The first case concerns small producers in Bat Trang who traditionally produced pottery and ceramics in charcoal-briquette kilns. Over the past 5 years, two thirds of them have switched to a technologically more advanced LPG kiln. Better control of baking temperatures combined with more intense heat resulted in the production of thinner and smoother ceramics with fewer defects. While the assortment used to be limited to standard pottery and home ceramics, the new technology also allowed a broad variety of contemporary and popular design, types, shapes,

colors and designs of ceramics are now produced. In addition, the small producers started to take an active role in direct sales to new groups of clients through opening retail shops. Small producers linked up with tourist operators in Hanoi to promote Bat Trang, and in a short time the village has become a tourist destination for buying ceramics. Both the small producers and the local authorities consider the introduction of LPG kilns in Bat Trang as a success story.

Value creation

The new developments translated into higher sales revenues for the small ceramics producers. The higher quality resulted in higher prices and expanded the market for domestic consumption, and some export contracts for Europe, Japan and the US. Small producers play an important role in export through subcontracts with larger companies and occasional direct contracts through tourists, families overseas and individuals who visited the village.

Process

The introduction of LPG kilns was initiated by one small producer, Mr. Le Duc Trong, who purchased a LPG kiln from China in 1995. Small producers in Bat Trang initially observed with interest and slowly started to switch to LPG kilns too. After initial trials and testing, the small producers succeeded in getting the kilns to operate shortly after their installation and now produce and sell a larger volume of higher quality ceramics. The small producers started to try out a broader assortment of products, picking up ideas from customers who suggested different shapes, designs and colors for the ceramics. Typically, a producer first develops a few test samples, or produces some extra items of a contracted order and tests their utility and marketability before expanding production. Small producers compare results with each other and review new technical possibilities and constraints, which determine the eventual selection of the assortment. They are very aware of the need to do better all the time, not only because of increasing competition within their village but also from other villages that try to copy Bat Trang's success. The local People's Committee actively promotes Bat Trang as the ceramics village and supports this through exposure, facilitating cooperation on business contacts and infrastructure. Overseas families and friends advise on their preferences for product design and on technical matters. Some small producers have family contacts with the Polytechnic University in Hanoi, which conducts research in the quality of glazing.

Duong Lieu cassava village

Newness

The second case concerns the introduction of a new product in Duong Lieu where many household businesses produce noodles from cassava starch. In the last five years, some twenty households have switched to producing a new end product, childrens' sweets from cassava starch. Producing the sweets is a relatively basic and straightforward process that involves heating and mixing the cassava starch with several other ingredients. The wrapping and packaging of sweets requires a major investment in a state-of-the-art machine. The small producers put effort into developing their own house-style for the packaging design. Several candy producers registered their designs at the Department of Property Rights, preventing others from copying them. Due to the considerable investment costs involved in setting up a new workshop , the candy production has, so far, only been feasible for middle-income households.

Value creation

Candy production adds more value to the processing of cassava starch than noodle production. The sweets are sold at a 'good' price to agents in Hanoi who distribute them to new profitable markets within Vietnam, such as shops, mini-markets and super markets. The sweets sell well, especially at holiday times. They compete with imported sweets and provide the households with higher overall sales revenues than from noodles.

Process

The initial idea for producing candy from starch came from one better-off family in the village. Today, this family business enterprise has become a successful small factory, serving as a model for other small candy producers. The switch to candy production implied an important change in the way in which workshops are set-up, requiring investments in new equipment and machinery, redesigning the production line and hiring new staff. All these steps were taken by the households themselves, without any external assistance. The twenty candy producers have similar production facilities. There is a lot of informal exchange of ideas and practices within the cluster despite the fact that small producers consider neighboring candy producers as competitors. The small producers therefore are continuously pursuing new types and tastes and consult with the buying agents in Hanoi about new trends in taste, color and shapes, as well as for wrapping and packaging.

Van Phuc silk village

Newness

The third case concerns the introduction of a new marketing function. Before the introduction of the free market economy in Vietnam, silk products in Van Phuc were sold to state-owned intermediaries. In the 90s, Ms. Nguyen Truc Hong became the first person to open a shop selling local silk in the village. Many have followed her example and today there are over 100 silk shops in Van Phuc. The producers also have broadened their range of products. Originally, the production focused exclusively on traditional silk fabrics, garments, accessories and garnitures made from silk that they produced and tailored themselves. Nowadays one sees much more stylish design in the shops with new shapes, colors, designs and a range of new products that includes shawls, jackets, pyjamas, sleeping bags and accessories (ties, bags, purses, etc.). Many of these new products break with the tradition of exclusively using high quality silk. Products are often mixed with synthetic materials of a lower quality.

Value creation

Over ten years, overall silk production in Van Phuc has tripled and sales to domestic and foreign tourists visiting the small shops account for 40% of sales. The lower input costs and quality of the synthetic materials have resulted in lower prices, which have attracted new client groups who accept the lower quality. This has led to an overall increase in sales volumes.

Process

The process of opening shops in the village started at the time when privately owned shops just began to develop in Vietnam. After the initial success of Ms. Hong's retail shop, other small producers and traders followed and started to set up their own shops on an experimental basis; trying-out different set-ups, product displays and ranges. By closely watching whether clients come, what they buy, at what price and what their neighbors did, the shop owners gradually improved their shops into attractive well-organized shops, packed with a broad assortment of silk products, with sellers able to provide information on the products, in English if necessary. The interactions within the cluster are critical; small producers keep an eye on each other's new product designs. Moreover, they have developed informal networks with technical and vocational training centers and links with tourist agencies in Hanoi that provide suggestions and feedback. The local authorities actively promote Van Phuc as a silk village and have invested in new infrastructure. The small producers are part of a larger silk industry in Vietnam, which

includes fashion houses, large production and export companies and government agencies. Ideas about design etc can also be gleaned from magazines, media and other means.

Quan Hoa bamboo District

Newness

The fourth case concerns the introduction of bamboo pre-processing technology for small producers. In 2005, the French NGO 'Groupe de Recherche de et d'Echanges Technologiques' (GRET) initiated a development project called the *Bamboo Supply Chain Development Project* to improve the position of producers in the Quan Hoa and Ba Thuoc districts (Thanh Hoa Province, northern Vietnam) in the bamboo value chain. Previously, the pre-processing steps were carried out by two larger bamboo factories - The Bamboo Factory (TBF) and Tien Dong - which did the cutting, splitting and smoothing of bamboo into slats for further processing into floor parts, boards and furniture components for export through IKEA to the European market. The GRET project facilitated the establishment of three new slat production workshops and organized small bamboo producers' groups to operate and manage the workshops. The TBF and Tien Dong did not consider the workshops as competitors, but cooperated with them, leasing equipment and providing technical advice and specifications for the bamboo slat processing. Not long after the workshops' establishment, several other private initiatives emerged and copied the project workshop model and also began to supply slats to the bamboo factories.

Value creation

The underlying idea of the GRET project was that pre-processing bamboo into slats would provide the small producers with higher sales revenues. Despite the extra added value, the direct sales revenues are still low due to the low prices offered by the bamboo factories (TBF and Tien Dong), which are the buyers and leading players in setting the price of the bamboo. Alternative market channels have not yet been established. GRET continues to look for further technological developments for alternative by-products such as charcoal and mushroom growing substrate from bamboo saw dust.

Process

Starting with the project idea in 2004, a team from GRET conducted a survey to explore the opportunities for, and feasibility of, slat production for bamboo producers. Subsequently, GRET facilitated the set-up of the workshops by proposing the appropriate technology and serving as a bridge linking the producers with the bamboo factories buying the processed slats. Once the

workshops were established, the bamboo producers and technicians from GRET jointly tested and implemented the technology. Apart from some minor adjustments, the slat production process and machines have not changed since the establishment of the workshops.

The table 2.3 below presents the interpretation and summary of the case descriptions for each criterion of the operationalized definition of innovation.

Table 2.3: Interpretation and summary of the case descriptions for each criterion of the operationalized definition of innovation.

Village	Bat Trang	Duong Lieu	Van Phuc	Quan Hoa
<p>Criteria</p> <p>Criterion 1.1: <i>The new 'something' (newness) concerns one of the types of innovation agreed on in the literature.</i></p>	<p>The LPG kiln is a new production process enabling the production of higher volumes of higher quality, with more variety in design.</p> <p>➤ Yes</p>	<p>The production of sweets instead of noodles from starch is a more profitable new product.</p> <p>➤ Yes</p>	<p>Direct retail sales to new client groups are taking over the marketing function from other players in the value chain.</p> <p>➤ Yes</p>	<p>The pre-processing of bamboo poles into slats is a new function applied by small producers.</p> <p>➤ Yes</p>
<p>Criterion 1.2: <i>The newness introduced represents a difference from its past within the specified unit of analysis.</i></p>	<p>The first small producers purchased the LPG kiln technology in 2001/2. Before that, ceramics in Bat Trang were only produced in charcoal kilns.</p> <p>➤ Yes</p>	<p>Five years ago a cluster of small producers started to produce the candy. One candy factory was established in the village 13 years ago.</p> <p>➤ Yes</p>	<p>The first shops were established in 1995. Before that time it was difficult to set up a private shop in Vietnam.</p> <p>➤ Yes</p>	<p>In 2005 GRET started to establish 3 slats workshops. Before then there was only one existing workshop producing chop sticks.</p> <p>➤ Yes</p>
<p>Criterion 1.3: <i>The producers and users perceive and acknowledge the newness as a breakthrough; a major achievement or success that permits further progress.</i></p>	<p>Over the past 6 years the LPG kiln been adopted by 2/3 of all small producers in Bat Trang.</p> <p>➤ Yes</p>	<p>Over 5 years, 20 households have switched to the candy production and there is evidence of a growing trend in the village to switch to candy production.</p> <p>➤ Yes</p>	<p>Nearly every house on the main street has been transformed into a retail shop since 1995. At present there are around 100 silk shops.</p> <p>➤ Yes</p>	<p>Several private initiatives have copied the workshop example and are now producing floor parts.</p> <p>➤ Yes</p>

Table 2.3 (continued)

Village	Bat Trang	Duong Lieu	Van Phuc	Quan Hoa
<p>Criteria</p> <p>Criterion 2.1: <i>More value is added by the firm either through lower input costs or higher sales revenues.</i></p>	<p>Higher sales revenues as a result of the increase in quality of the ceramics. Greater buyer value implying a higher price.</p> <p>➤ Yes</p>	<p>The production of sweets instead of noodles results in higher sales revenues.</p> <p>➤ Yes</p>	<p>Higher sales revenues as a result of higher sales volumes and lower input costs for mixed silk fabrics.</p> <p>➤ Yes</p>	<p>Higher sales revenues as a result of the pre-processing of bamboo into strips.</p> <p>➤ Yes</p>
<p>Criterion 2.2: <i>More value is generated by improving the unit of analysis' competitive position at local, national or international market.</i></p>	<p>New customers such as foreign tourists, restaurants and hotels. These occasionally lead to follow-up contracts with Japanese, European and American visitors.</p> <p>➤ Yes</p>	<p>Although both noodles and sweets are sold on the domestic market, the sweets are sold into new and more profitable markets, such as supermarkets in Hanoi.</p> <p>➤ Yes</p>	<p>New and broader client groups – both domestic and foreign tourists - are coming to Van Phuc to buy silk and silk products.</p> <p>➤ Yes</p>	<p>The small producers did not enter new markets and their competitive position has not changed.</p> <p>➤ No</p>
<p>Criterion 3.1: <i>The introduction of the newness is typically a chaotic process of three component elements.</i></p>	<p>The idea of the LPG kiln came from the small producers themselves with one taking the initial step of purchasing one. The small producers experimented with the best way to operate the kiln before producing on a larger scale and commercializing products.</p> <p>➤ Yes</p>	<p>The small producers themselves got the idea to switch to candy production and did the exploratory and preparatory work themselves. They tested whether they could successfully sell the candies, and started to explore ideas to improve sales.</p> <p>➤ Yes</p>	<p>The idea of establishing shops came from within the village. Gradually shops were set up, and improved. Shop owners continue to test new ideas to make their shops as attractive as possible, including having the workshop nearby so that tourists can visit.</p> <p>➤ Yes</p>	<p>The workshop owners themselves did not go the three stages described in the literature. Ideas were imported from outside, which also supplied the machinery and production standards. The owners were only involved in the implementation phase.</p> <p>➤ No</p>

Table 2.3 (continued)

Village	Bat Trang	Duong Lieu	Van Phuc	Quan Hoa
<p>Criteria</p> <p>Criterion 3.2: <i>The introduction of newness is typically a learning process within the unit of analysis.</i></p>	<p>Small producers continue to seek to improve the quality of their ceramic products. They continuously generate ideas for better glazing, test these and implement them if they prove successful.</p> <p>➤ Yes</p>	<p>Small producers test new textures, tastes colors and wrapping of the sweets. Every year buyers ask for new flavors and the producers respond to these demands.</p> <p>➤ Yes</p>	<p>The shop owners pursue new ideas and experiment themselves to make the shops more attractive and select the best range of products, which are constantly evolving.</p> <p>➤ Yes</p>	<p>The farmers did not further develop the strip processing machine technology and still use it the same way as it was originally installed.</p> <p>➤ No</p>
<p>Criterion 3.3: <i>The innovation process is characterized by interaction in the environment of the unit of analysis.</i></p>	<p>There is interaction with buyers who suggest designs, colors and the quality of the ceramic products. The authorities support ceramics production in Bat Trang and universities do research in glazing techniques.</p> <p>➤ Yes</p>	<p>Interaction with buyers, mostly in Hanoi, over the taste of the sweets.</p> <p>➤ Yes</p>	<p>There is interaction with tour operators, and with the clients who suggest products. The local authorities and national government are promoting Van Phuc as silk village. There are exchanges with fashion schools.</p> <p>➤ Yes</p>	<p>There is interaction with the development NGO and the factories that buy the bamboo strips.</p> <p>➤ Yes</p>
<p>All criteria confirmed?</p>	<p>Yes</p>	<p>Yes</p>	<p>Yes</p>	<p>No</p>

2.7 Interpretation and discussion

The primary empirical data presented in the table 2.3 in the preceding section allows us to give a positive answer to the question whether innovation occurs in clusters of small producers in northern Vietnam: technological innovation takes place in Bat Trang ceramics village, product innovation in Duong Lieu village and market innovation in Van Phuc silk village. It is notable that the innovation process was the result of the agency of a number of interacting household-based enterprises in these villages, in contrast to the way that innovation is usually described in western literature as a firm-level process. The ownership of the elements of the innovation process - idea, testing and implementation - as well as the value created was shared among the small producers in these clusters. This suggests that *cluster-level* innovation is a more appropriate term in this context.

The conclusion that innovation does take place in these three traditional Vietnamese craft villages is perhaps surprising in the sense that innovation was not planned for nor promoted and no formal innovation system exists with a specific agenda for promoting innovation. The fourth case (bamboo pre-processing) did not meet all the criteria. Contrary to the expectation of this technology transfer project, initiated by an international development NGO, cluster-level innovation did not take place. The idea and testing steps of the innovation process were initiated and owned by the NGO and the associated learning took place outside the cluster. Another criterion not met by this case was improvement of the cluster's competitive position. After adding the new production steps, the products were still sold to the same buyers in the value chain holding strong bargaining power and a monopoly in the value chain. These dominant value chain actors were in the position to negotiate lower prices and appropriated the value created; the actual competitive position of the clusters did not improve

The small producers in the three identified cases of innovation innovated by themselves, drawing on their own strengths and initiative via internal processes, interactions and knowledge accumulation within the cluster. In this respect, this article demonstrates local innovation capacity from small producers who supplement and combine local indigenous knowledge and technologies with global state-of-the-art technology. This contradicts the underlying assumptions of trickle-down theory, appropriate technology and indigenous knowledge for low-income countries, which do not adequately acknowledge local innovation capacity. The fourth bamboo case is in line with these theories which advocate external assistance and interventions to help small producers to learn and advance. Here, the external actor was eager to take over and own the learning in the innovation process. The question of what influences eagerness to learn and

discover is not yet understood within evolutionary economics, even though the discipline recognizes that learning is a critical element in the innovation process (Dosi and Nelson 1994). This also is relevant for these poor communities, what gives them the drive to innovate? Is there an optimum or 'desirable' level of learning or an optimum amount of innovation?

The absence of direct external public or private 'innovation' support or interventions in the three successful examples is in line with endogenous growth theory (Romer 1994) which argues that economic growth comes from within a system. The entrepreneurs indicated that the cluster provides an extra dimension that facilitates the innovation process through social ties. The literature refers to this as social capital (Putnam 2000, Knight 2003). It was evident in the villages in terms of the available information, trust and confidence, all of which enabled learning and risk-taking, both factors that strengthen the entrepreneurial spirit. At the same time, the small producers recognize that the social context in which they innovate sometimes has negative consequences. They compete for clients and some entrepreneurs within the cluster appropriate more innovation value than others.

Despite the innovation process taking place and being owned entirely within the clusters, it cannot be labeled as endogenous growth since there were critical interactions with the outside world. Incentives, ideas, suggestions and opportunities came from buyers, sellers, the media and industries. Changes in the outlets used were particularly significant in changing the nature of the small producers' relationship and links (direct or indirect) with global value chains (and therefore the process of globalization) (Gereffi et al. 2005). This is a distinctive feature that has been described in several examples of small-scale innovations in developing countries, such as the ethnographic descriptions of innovation by smallholders in rural Africa (Hill 1960). Other works on agricultural innovation inspired by the *Green Revolution* have examined how innovation systems have been operationalized. Sanginga et al. (2009) studied innovation among small-scale producers adopting agricultural technologies in Uganda. Hall (2007) discussed the challenges involved in strengthening agricultural innovation systems in Africa. Tran and Nguyen (2012) summarized the goals and policies for establishing an innovation system in Vietnam's agriculture sector, which is being supported by government, development agencies and university research programs in a bid to boost agricultural production.

This study presents three cases of innovation that have occurred in the absence of any formal system of promotion by public or private organizations. In each case the innovation process took place within informally structured clusters, raising the question of whether a cluster can constitute an informal innovation system. In the three cases where innovation can be confirmed

there are interactions with the outside world, but this does not involve the larger parties sharing or owning the steps of the innovation process - as described in the classical definition of innovation system - but merely exchanging incentives, ideas and suggestions with clients, suppliers, competitors, etc. If the interactions do not involve sharing the steps of the innovation process, then how precisely do these interactions fit within innovation systems theory? The operationalization of the definition shows the necessity to distinguish ownership between a *shared innovation process* and *interaction*.

How is this shared innovation process structured in a larger system? Edquist (1997) stressed that institutions play an increasingly important role in innovation systems theory. As the number of actors involved increases, the innovation process becomes more complicated and more interactions occur. For both informal and formal innovation systems, questions about how these systems are organized emerge. How are the interactions and the cumulative knowledge generation of the system's actors structured? How is the created value shared within the system?

Regarding the sharing of value creation, Gereffi et al. (2005) take the position that innovation can enable low-income countries to strengthen the competitiveness of their firms through participation in global value chains. The fourth case describes small producers taking over a bamboo pre-processing function from the leading actors in the chain, which could be labeled as outsourcing. It illustrates how the created value is appropriated by the lead actor. New technologies may be introduced to small producers in the value chain, but if improved competitiveness does not materialize then, according to the operationalized definition, this is not innovation.

Another observation for further discussion is the innovation assessment instrument itself as research tool. Although the theoretical basis of the instrument comes from contemporary economic concepts on innovation, which were principally developed from studies rooted in the context of western developed economies, the operationalized definition was able to differentiate between innovation and non-innovation in the context of a low-income country. This confirms the validity of the conclusion, that innovation did actually take place in the three of the four cases.

There is scope for further refining the instrument's criteria and operationalization. Since these criteria have not been completely materialized in the literature, it was not possible to make unambiguous choices for all of them. The operationalization for whether all steps in the innovation process take place within the cluster requires a detailed historical review. Different

people involved could have different perceptions of the past making it difficult to construct the historical path. Assessing data against the operationalization for learning also proved challenging: at what point is learning related to innovation?

The operationalization of the definition illustrates the necessity to be explicit about the level at which innovation is assessed; the firm, the cluster, the value chain, etc. At one level the research instrument could confirm a criterion, while at another level it could not. For instance, if the unit of analysis of the fourth case is altered to a broader level - incorporating the development NGO that introduced the newness, then the process and learning criteria would be confirmed. At the same time, other criteria may not apply when enlarging the unit of analysis. For example, in the fourth case, the production process was new for the cluster, but for the broader level the newness criterion would not be confirmed.

2.8 Summary and conclusions

This chapter has developed a research instrument to measure innovation in a developing country context. It demonstrates that innovation can and does occur in small producer's clusters in a developing country. Poorer producers take advantage of domestic economic growth and globalization. This is not in line with some positions in the development economics debate which argue the primary effect of globalization is to widen the gap between rich and poor. This is certainly an interesting avenue for developing a deeper understanding of innovation and development processes in low-income countries and raises a number of suggestions (below) for a future research agenda.

The first issue for further research concerns the fact that small producers innovated on their own account, using their own strengths and initiative, while the 'technology transfer project' did not demonstrate innovation. Comprehensive lists of innovation processes, factors and drivers have been described for western companies, but what about clusters of small producers in Vietnam? How did the innovation emerge in the confirmed cases? Do similar factors also apply? Further related research questions include: What made it possible for small producers to innovate on their own strengths without the support of an innovation system, understood as necessary in western economies? Was it because of endogenous or exogenous factors? Does this suggest the existence of some kind of informal innovation system? And, what determines eagerness to learn and innovate?

A second issue is the contribution that innovation makes to poverty alleviation in a broader context. This chapter reviews three success stories of innovation but what of the effect on, for instance, neighboring communities that did not introduce new things? Was the success of these villages at the expense of other villages nearby? How many failing villages will there be for every success story? Equally, within the cluster there can be a question of the distribution of the benefits, particularly given the heterogeneity within the clusters of small producers or in the value chain. Do the early innovators take a disproportionate advantage of the value created?

A third issue is the operationalization of the definition of innovation that helped explore innovation among clusters of small producers in a developing country (Vietnam). Further research and broader application of the instrument could further refine the operationalization and assess the scope for innovation among small producers on a larger scale providing comparative material, between sectors, geographic areas or businesses in various stages of development. When more such studies from developing countries become available, the question ‘is it innovation?’ can be addressed more systematically by drawing on a body of literature and empirical data that studies innovation in developing countries.

Finally, the fact that the innovation process is owned and managed at the cluster level (*cluster-level innovation*) has methodological implications for addressing the further research questions. To understand the many possible pathways and outcomes associated with these innovations it became critical to analyze how the enterprises interact with each other and with other community members. Clearly, some of them will be more involved and have more interest than others. Any future research along these lines should take account of the identities and roles of actors, perceptions and reactions with regard to the ownership of the innovation process and the ownership of the value created. Taking the cluster as unit of analysis will be essential to the empirical framing of innovation research in the small producers’ craft villages in northern Vietnam.

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ANNEX A (to chapter 2): Interview quotes exploring innovation

Production at cluster level

Bat Trang:

“Ceramics is our craft in the village and we have been doing it in our families for a long time.”
- Ceramics producers in household workshop (May 2007)

“The cluster is like a big enterprise. It is differently organized than one, but I see it as one system with everybody working together to make Bat Trang a success.” - People’s Committee administrator (January 2008)

“If I have a large order I subcontract it to my neighbors. Together we can accept large orders by involving the other producing households. Alone I cannot.” - Ceramics producer and shop owner (May 2007)

Van Phuc:

“Because of the concentration of many shops there are many clients. In the village there are the silk weavers, the dye workshops, the tailors and the shops.” - Shop owner (January 2008)

“It was the silk village that connected with these tourist companies. One shop cannot do that alone.” - People’s Committee member (January 2008)

“One shop comes up with a new idea for new design or color, weavers and dye workshop have to follow.” - Shop owner (January 2008)

Duong Lieu:

“Our village is a famous noodle craft village. I sell the starch to other household businesses and small factories that produce noodle, sticky starch, soft drink, candies and medicine pills.”
- Starch producer (May 2007)

“First we produce with our own capacity. If that is too limited then we ask the neighbors to help.” - Candy producers (May 2007)

“In the villages the starch producers supply the noodle and candy producers. Producers cooperate and need each other. It is a production line.” - People’s Committee official (May 2007)

Joint innovation activities/process

Bat Trang:

“With some small producers in the village we had the idea to produce better and to do cleaner production at the same time. The idea stayed in the village for a while as we looked for better technology.” - Early innovator (May 2007)

“We asked the local authorities to help and they contacted GTZ to organize a workshop in the village with technical experts.” - Early innovator (January 2008)

“University knowledge helps a bit, but the main experience comes from our parents. A lot of effort is put into enamel used for glazing.” - Ceramics producer (May 2007)

“Over time we helped each other and we learned how to use the LPG kiln, getting better temperatures, baking times, types of material and shapes.” - Ceramics producer (May 2007)

“Years after of successful introduction [of LPG technology], Mr. Trong did not earn huge amounts of money, which could be expected for an early innovator. Rather he helped to disseminate and advise (on a profit basis) other producers to install the kiln technology.” - Early innovator (May 2010)

Duong Lieu:

“Step by step the candy producers learned the technology by themselves: how to produce candy from the sticky starch. There was no support.” - People’s Committee member (January 2008)

“There is no direct contact or exchange of production but we watch each other closely. Every candy producer introduces its own new flavor once in a while.” - Candy producer (January 2008)

“We learn by ourselves and we closely watch our neighbors.” - Candy producer (May 2007)

“All production lines are the same, they have the same technique so there is some kind of coordination.” - People’s Committee member (January 2008)

Van Phuc:

“The majority of silk producers go for low quality silk. Only three or four families in the village still produce high quality silk.” - Silk shop owner (May 2007)

“I used to work in a state owned shop at Giang Vo Street in Hanoi, then I got the idea to open a silk shop in my village. At first I had a display shop because it was forbidden to sell, many people copied my example. Initially I thought this was good because the more shops the better. Now there are too many shops.” - Early innovator (January 2008)

Xuan Phu (Not a joint innovation process)

“GRET and IDE introduced the idea of establishing bamboo pre-processing and carried out a feasibility study and brought the pre-processing machinery to the village.” - NGO technical advisor (Hanoi, January 2008)

Network of contacts interaction with the outside world

“My husband worked in East Germany and he has friends and family who help with export opportunities. I feel confident because of the long term experience within the family.” - Ceramics producer in Bat Trang (May 2007)

“We produce big orders for hotels which provide their own design.” - Ceramics producer in Bat Trang (May 2007)

“We sometimes make new designs ourselves and sometimes the customers provide the design. Tourists come and buy some items and later they order more.” - Silk shop owner in Van Phuc (May 2007)

“The Hanoi supermarkets provide us with ideas for new taste, wrapping and packaging. Every year we come with new tastes.” - Candy producer in Duong Lieu (May 2007)

“We have contacts with the university for fashion and design in Hanoi, they provide us with ideas for new design.” - Silk shop owner in Van Phuc (May 2007)

Social capital in the villages facilitates the innovation process

“I invested 6000 Euro in the LPG kiln technology and I still only earn 400 Euro per month. I dared to make that investment because I know that family and villagers will help. It felt ‘good’.” - Ceramics producers in Bat Trang (May 2007)

“There is a feeling of solidarity and of pride in the village.” - Coffee shop owner in Bat Trang (January 2008)

“I take more risks because my family and friends have confidence, by myself I would not have taken the risk.” - Ceramics producers in Bat Trang

“A critical thing is that the people together are stimulating the entrepreneurial spirit, some more, some less.” - People’s Committee administrator in Duong Lieu, (January 2008)

“The other candy producers gave me the idea. They are successful so I will be successful. That gave me the courage to invest. I have a backup knowing that people will help me if I fail. I can always go back to producing noodles or work in a starch workshop.” - Candy producers in Duong Lieu (January 2008)

“The workshops are open, everybody walks in and out and asks for advice. We sometimes share.” - Home based silk weaver Van Phu (January 2008)

“I opened my shop with the support of my family in the village.” - Silk shop owner in Van Phu (January 2008)

Ownership of the innovation process and the added value

“Villagers became richer and we are proud of our village. It brought income security. Everybody is taking advantage: the supplier, the transporter.” - People’s Committee administrator in Bat Trang (May 2007)

”LPG ceramics production provides a stable income for many households in the village.” - People’s Committee administrator in Bat Trang (May 2007)

“There is no one from outside telling us what to do. That was different when the production was under the collective, then we had to follow production instructions.” - Ceramics producer in Bat Trang (May 2007)

“We have contacts with the university for fashion and design in Hanoi, they provide us with ideas for new design.” - Silk shop owner in Van Phuc (May 2007)

“The shop owners earn the most but for us it is also good. We have a more stable income now.” - Dye workshop owner in Van Phuc (May 2007)

“Candy is a different market segment and offers the producing household a stronger competitive position.” - People’s Committee member in Duong Lieu (January 2008)

“We sell directly to the shops and state agencies in Hanoi. There are no local middlemen involved. So we keep more profit.” - Candy producer in Duong Lieu (January 2008),

“The increase in production meant we have to hire laborers from outside the village.” - Ceramics producer in Bat Trang (May 2007)

“Due to the increase in production we have to hire laborers from outside.” - Starch producer in Duong Lieu (May 2007)

Xuan Phu (Quan Hoa district) where the innovation process was not owned by the cluster:

“There are only two outlets for the pre-processed bamboo slats, Tien Dong and TBF. However, these buyers have monopoly of the market and keep the price low. We have to find additional technical solutions to earn more.” - NGO technical advisor (Hanoi, January 2008)

“TBF works with us and leases us the machines, they give us instructions about how the bamboo should be pre-processed.” - Workshop owner in Xuan Phu (January 2008):

“We still do not earn enough because of the low price. GRET suggested we process the bamboo waste material into charcoal and substrate to grow mushrooms. They have now introduced some field experiments.” - Bamboo producer in Xuan Phu (January 2008)

Competition within the cluster

“Everybody keeps their own enamel composition secrets, they do not share these with their neighbors.” - Ceramics producer in Bat Trang (May 2007)

“Between the households there is cooperation and exchange but also competition for new clients.” - Local government official in Bat Trang (May 2007)

“Our neighbors are our competitors. The cluster is not always positive, there is both competition and solidarity at the same time.” - Ceramics producer in Bat Trang (May 2007)

“We do not share the design pattern for the loom, we consider this to be a family secret.” - Silk weaver Van Phuc (May 2007)

“The composition of the enamel for glazing is the hallmark of each household. It is a family secret and other households are not allowed to know.” - Ceramic producer in Bat Trang (January 2008)

“It is now common practice to cheat clients and say that it is 100% silk while it is not.” - Silk shop owner in Van Phuc (May 2007)

“Now there are too many shops and too much competition. New shop owners are not from the village.” - Silk weaver in Van Phuc (January 2008)

Chapter 3

CONCEPTUALIZING RESPONSIBLE INNOVATION IN CRAFT VILLAGES IN VIETNAM

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3.1 Introduction

Many economists, politicians and other economic actors consider innovation to be a key for competitiveness and economic development. Although, in economic circles, this viewpoint is generally accepted in relation to developed economies, there is a debate whether innovation is applicable, accessible and relevant for all businesses in every economic context (Schmitz 1999, Kaplinsky 2000). With this in mind, we revisited our past research into new economic dynamics among small business clusters in several craft villages in the Red River Delta (northern Vietnam), where poor small producers introduced new technology, new products and new ways of doing business. These new ways of creating value and improving competitiveness resulted in economic development - a view shared by the innovators, the villagers and local officials. Below we provide several examples of the innovations that we discovered.

Duong Lieu cassava noodle village. Groups of households traditionally processed cassava tubers into starch (as an intermediate product), and sold it to other groups of households producing noodles. Recently, several households switched to new end products made from starch: children's sweets, medicine pills and soft drinks. These small producers have invested in small machinery, add more value and now sell their products to more profitable outlet channels in Hanoi and beyond. As a result they enjoy higher family incomes.

Bat Trang ceramics village. In the old days, small producers in the cluster baked ceramic products in traditional pottery kilns, fired with wood and charcoal. Over the last ten years, small producers have begun to fire their kilns with Liquefied Petroleum Gas (LPG). This has

resulted in better quality ceramics higher production volumes and new designs for the ceramics. The village has become a ceramics hot spot in northern Vietnam. Small producers have established ceramics shops for the many tourists that now visit the village and conclude export contracts with buyers from Japan, Europe and USA.

Van Phuc silk village. The silk industry village was collectivized for a long period in the socialist command economy. After the introduction of the free market economy in Vietnam, some members of the diluted collective established retail shops in the village and introduced new marketing practices. This resulted in an increase of home-based silk production, many new clients and tourists visiting the village and economic prosperity in the village.

Phu Vinh rattan and bamboo village. For decades the village has produced traditional bamboo and rattan articles for the domestic market. Small producers in the village have special skills in weaving rattan and bamboo. Some 10 years ago, a number of export companies were established around the village and successfully initiated exports to US and Europe .The export companies outsource the orders to middlemen in the village who subsequently engage small producers for the actual production. There was a significant shift to producing higher quality and more expensive rattan and bamboo products with a large increase in value created.

In line with our interest in poverty alleviation in developing countries, we wondered whether the new practices could be understood as *innovation* in the economic sense; entrepreneurs themselves initiating new business practices, acquiring or developing new technologies and making new products thereby improving their business and competitiveness and ultimately increasing their incomes. This was not an easy question to answer, as the understanding of innovation is strongly rooted in advanced hi-tech western economic systems (Tether 2003), very different from the largely informal economic context that prevails in Vietnam and other developing countries. We sought to conceptually clarify innovation in the Vietnamese context by taking theoretical insights from various fields of social sciences including economics, sociology and business administration. This led us to develop a generic definition of innovation “as the process of introducing something new that creates value” (Voeten et al. 2011) from which we derived and develop an innovation assessment instrument; a criteria checklist with threshold values. With this instrument we identified a number of cases of cluster-level innovation in northern Vietnam (*ibid.*). While these new practices generated the economic advantages (e.g. value creation and improved competitiveness) often associated with innovation (Porter 1990),

we also noticed that the innovations led the villages to experience other environmental and social consequences, some negative, others positive. Some examples are listed below.

In Duong Lieu, increased cassava starch production, an intermediary product for the newly introduced products, has created significantly higher amounts of organic waste which is dumped into the open sewage system. Universities and NGOs have reported on the alarming soil and water pollution and associated health problems. However, the many small producers ignore these reports and it seems that they do not want to know.

In the past the smoke emissions from traditional charcoal kilns produced a lot of air pollution in Bat Trang village. The introduction of the new LPG technology resulted in a much better air quality which was recognized by the majority of villagers. Individual small producers considered the desire for cleaner air in their decision-making when considering investing in the new LPG technology. There is a collective concern for a clean environment.

The increased silk production and new fashionable products in Van Phuc village resulted in the use of toxic chemicals in the dyeing process. Severely polluted waste water is discharged into the sewage system and the surface water around the village became very dirty. Although the villagers are aware of the environmental problems, most of them accept them as a trade-off for the benefits of innovation. The small producers and the shop owners do not feel responsible for taking action.

In Phu Vinh, business has been good for the export companies and the middlemen but not so good for the poor small household producers in the village. To their dissatisfaction, the export companies repeatedly negotiated lower unit prices, paying the workers less per unit produced. These days more family members (including children and elderly people) do the actual rattan weaving but despite this poverty levels have increased.

These consequences raised a new question about the broader impacts of innovation: to what extent have the innovations contributed to poverty alleviation and sustainable development? Measuring progress towards these objectives requires a view that goes beyond a narrow economic focus on just measuring value creation and incomes. Poverty is a complex multidimensional phenomenon that is intrinsically linked to the sustainable development debate (London 2007). Poverty has environmental and social aspects, such as equity, distribution, basic needs, access to resources, clean water, sanitation, a healthy environment, gender inequality, political freedom etc. (Sen 1999, World Bank 2000), all of which need to be considered. Sen (1999) also proposed that measures of poverty should include the physical conditions of

individuals and their capabilities to make the most of the opportunities they have. A basic needs approach has also emerged which defines households as being poor if their food, clothing, medical, educational and other needs are not being met (Glewwe 1990). Alkire (2007) has suggested adding participation to this static set of dimensions thereby highlighting the importance of the notion of *inclusive development* (World Bank 2008).

One of the focal points of our research was to try to understand and conceptualize the contribution that innovation makes to contributing to poverty alleviation and sustainable development. We used the phrase *responsible innovation* (socially responsible innovation) to describe situations where innovation is accompanied by concerns about societal and environmental consequences and the acceptance of responsibility by the innovators. This term is mostly used in relatively highly developed, western and technologically advanced situations (Douglas and Papadopoulos 2010, Ubois 2010⁷) and reflects concerns about the sustainability of innovation. Responsible innovation is generally defined as a process of innovation that includes societal values, interests, needs, rights and welfare, and involves discussions and interactions between the developers of technology, individual actors and other third parties (NWO 2008). However, it is still far from clear what responsible innovation means in developing economies and small-scale industrial settings and how it can be operationalized. This led to our next research question: how can we understand and conceptualize responsible innovation within the context of small producers' clusters in Vietnam?

Our initial literature explorations (covering the social, technical and human sciences) provided us with a wide range of theoretical leads, clues and associations about the nature of innovation, poverty alleviation and sustainable development and the linkages between them. Responsible innovation is a multi-faceted phenomenon, and partly because of this, we did not find a single theory or discipline on which we could construct our conceptualization of responsible innovation. This was partly because the literature is very western-oriented and makes little reference to the realities facing small producers in developing countries. Our desk study did not open up any clear avenues for developing a satisfactory conceptualization of responsible innovation and we choose instead to use and analyze empirical data without too much reliance on preconceived theories. To do this we applied *grounded theory*, an inductive systematic research methodology that involves the development of theory through empirical explorations combined with wider theory analysis (Glaser and Strauss 1967). This approach led us to go out into the field with our initial theoretical clues, which we used to structure the field work and the collection of case study

⁷ <http://issuu.com/fondazionebassetti/docs/jeff-innovation-aaa-2010-2>

based data. Through an iterative process of data collection and theory analysis, we identified the patterns, relevant elements and key issues relating to responsible innovation within the Vietnamese clusters. This allowed us to build a generic check list of criteria, including threshold values, for distinguishing what is responsible innovation from what it is not.

The fieldwork comprised two data collection missions of two weeks each in the four Vietnamese villages in 2010. The data were collected through observations and open interviews in the villages with relevant actors. Additional data collection involved reviewing the previously collected data and collecting secondary context-specific data on social and environmental changes in the four locations in Vietnam and materials from research institutes, NGOs and government agencies.

3.2 Theoretical clues

In the preceding chapter we developed a definition of innovation; ‘the process of introducing something new that creates value’. This served as an entry point for exploring the theoretical clues since it captures three key elements of innovation: newness, process and value creation (Voeten et al. 2011). ‘Responsible’ was another aspect, which we explored through the concept of sustainable development, a term initially employed by Brundtland (1987). She sought to address the problem of conflicts between environmental and development goals and formulated a definition of sustainable development: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. In the extensive discussion of the concept since then, both academics and practitioners have recognized that this has three aspects: an economic aspect (an economically sustainable system that produces goods and services on a continuing basis); a social aspect (a socially sustainable system that provides distributional equity, adequate provision of health care, education and other social services, gender equity, political accountability and participation) and an environmental aspect (an environmentally sustainable system that maintains a stable resource base and avoids the over-exploitation of renewable resource systems or environmental functions) (Harris et al. 2001) While sustainable development was initially developed as a generic concept, many authors (see for example Elkington 1999, Hart 2007, Roome and Boons 2005) have specifically applied the principle to business, in an attempt to define and promote sustainable business, often characterized in the slogan *People Planet Profit*. This phrase expresses an expanded spectrum of values and criteria for measuring business success that covers environmental and social performance as well as economic aspects. We systematized our

literature explorations by relating the three aspects of innovation ('newness', 'value creation' and 'process') against the social and environmental aspects of innovations.

Newness

Newness implies that innovation is about creating a changed 'state'. The literature on the social aspects of newness in innovation⁸ generally discusses the ethical aspects of new products; whether they are ethically acceptable or desirable for consumers (Earle and Earle 2001). Examples include the introduction and promotion of unhealthy foods, extremely violent computer games or children's toys that contain toxic materials (Bhattacharyya and Kohli 2007). Bezençon and Blili (2010) have explored consumer involvement in the design and development of new ethical products. Debates on new production processes and technology have focused on social issues such as labor conditions and workers rights (Ewing 2006) and the creation or loss of employment (Pianta 2005). Other discussions about a new sustainable business model, have focused around ethical standards (Drucker 1981) and the economic involvement (or exclusion) of marginal groups. Others have explored responsible organizational and management innovation looking at ethical questions such as human resource management policies and practices (Birkinshaw et al. 2008, Hamel 2006, Trott 2005).

The environmental aspects of newness have also been extensively discussed, particularly in terms of the environmental impacts of using and disposing of new products (Roome and Hinnells 1993), as well the length of the product use cycle (Davis and Blomstrom 1975). *Cradle to cradle* is a concept that has been much discussed in the past decade (McDonough and Braungart 2002). This calls for reusing all the materials involved in industrial or commercial processes. The *greening* of production processes and the introduction of clean technologies has also received much attention (Chang 2011, Hart 2007, Fiksel 1996). Bansal and Roth (2000) explored 'ecological responsiveness' and used this concept to explain why businesses go green. There have also been environmental debates over accessing new markets and the environmental impacts of distributing materials along global production chains. New sources of supply and inputs raise questions about the possible depletion of natural resources. Barbier and Homer-Dixon (1996) have discussed resource scarcity and technical innovation in developing countries.

⁸ This literature broadly classified newness in terms of several types of outcomes (Schumpeter, Freeman, Edquist, Oslo manual) such as new product, new production process/technology, new markets, new inputs etc.

Value creation

The literature concerning ‘responsible value creation’ discusses the ethics and principles surrounding the creation of monetary value (Lindfelt and Törnroos 2006). There has been a debate about the just and fair distribution of the benefits (and costs) of innovation within communities (Bigsten and Levin 2000). A key question in these debates is whether those who took the risks and invested their time and money shared the benefits in an equitable or even-handed way; excessive appropriation of benefits by a minority is often a cause of poverty in developing countries. Value creation and value appropriation are both necessary to maintain a competitive advantage (Mizik and Jacobson 2002). Value creation also occurs when businesses plough back some of their profits into the community (supporting social activities or study scholarships) and the environment (e.g. planting trees). Hart and Milstein (2003) identify different methods for *sustainable value creation*. They stress the importance to a business of (i) managing today’s business while simultaneously creating tomorrow’s technology, markets and opportunities and; (ii) nurturing and protecting their internal organizational skills, technologies and capabilities while also being receptive and infusing the firm with new external perspectives (e.g. knowledge from outside stakeholders). Economists, the business community and ethicists have also had heated debates about the relative merits of creating consumer surplus for a small rich group of consumers (via premium quality and high-priced services and products) or through providing lower priced products for those with lower incomes at the Bottom of the Pyramid (Prahalad 2005). Fair Trade is a large and growing social movement based on market-based approach that aims to help improve the conditions and remuneration of producers in developing countries and promote sustainability (Moore 2004). The movement pays higher (‘fair’) prices to producers and promotes better working social and environmental standards (Nicholls and Opal 2004, Stiglitz and Charlton 2005).

Responsible value creation is also a central element in discussions about internalizing the real environment costs of production (Rabl 1996) and paying to repair (or avoid) environmental damage. An environmental impact assessment can be used to explore the environmental (and social) impact that a (proposed) project is likely to have on a locality and ways that adverse impacts could be minimized or compensated for (Bartlett and Kurian 1999). Another debate focuses on the substitutability between the economy and the environment, a debate that is expressed in terms of ‘weak’ and ‘strong’ sustainability. Brekke (1997) applies this to development projects, which can be said to be weakly sustainable if the development is non-diminishing from generation to generation. Strong sustainability involves “conserving the stock

of human capital, technological capability, natural resources and environmental quality” (Brekke 1997).

Process

Various authors have discussed the social acceptability and desirability of business processes, and whether managers do (or should) acknowledge responsibility for business outcomes, including those emerging from innovation. The thematic research program on responsible innovation of the Dutch Organization of Scientific Research (NWO) refers to responsibility as “the need for the inclusion of societal values, interests, needs, rights and welfare into the innovation process, application and interaction with technology developers, practitioners and users as individual actors” (NWO 2008). This view of responsible innovation includes the morality of decision-making, especially choices made today that will affect others and future generations. Thus it explores the subjective and interpretative ethical issues that are embedded in the moral responsibility of the individual.

Philosophers since the ancient Greeks have explored responsibility, moral behavior and the extent to which individuals are (and should be) responsible for their actions. It was argued that the good will and adherence to a rule, was the highest good - a view also known as the deontological or *merit-based* view (Bowie 1999). This view sees the intention behind an action (rather than its consequences) as defining whether or not an action is good and the individual has acted responsibly. From this perspective, responsible behavior involves a willingness to innovate in a sustainable way. However, what people perceive as responsible behavior- aimed at making the world more sustainable - may not always produce the intended effects. The *consequentialist view* (Anscombe 1958) considers the rightness of an action in terms of its consequences. From this standpoint, a morally right action is one that produces a good outcome.

These older philosophical debates have influenced a vast amount of literature covering Corporate Social Responsibility (Frederick 1960), business ethics (Drucker 1981) and stakeholder theory (Freeman 1984). Ideally, CSR would function as a built-in, self-regulating mechanism through which businesses monitor and ensure their adherence to the law, ethical standards and international norms. As an example, Siemens⁹ has formulated a business ethics code with rules covering integrity, anti-corruption, occupational health and safety and human rights. Following the principles of CSR and stakeholder theory, a number of reporting guidelines or standards have been developed to serve as frameworks for social accounting, auditing and reporting (Henriques

⁹ http://www.siemens.com/annual/09/pool/en/downloads/siemens_ar09_integrity.pdf

and Richardson 2004). Although these ideas have gained ground in recent years, there are still ambiguities and discussions about the underlying concepts. The theories assume a certain degree of altruism among entrepreneurs, managers, and other business decision-makers, an assumption which some question (Stieb 2009). Critics and proponents of CSR often disagree about actual and desirable nature and scope of CSR, partly because they have different perceptions and understandings of the role and purpose of business in society (Idemudia and Ite 2006). These tensions mean that CSR has become a disputed concept which combines elements of sustainability, corporate governance and corporate accountability to stakeholders. The financial crisis of recent years has sparked a high profile debate about (ir)responsible behavior within the banking sector.

These initial explorations of the literature did not produce any firm conceptualization of responsible innovation, but did provide some clues that informed our subsequent empirical work. It was clear that the sustainability aspects of innovation are usually addressed and defined in terms of social and environmental consequences. Monitoring and reporting on such consequences is one of the main ways in which enterprises assess and make public their conformity to sustainable business practices. The most common approaches employed include Triple Bottom Line (TBL) reporting (Elkington 1999), score boards, and other criteria checklists (e.g. the 'MVO ladder'). In epistemological terms a focus on outcomes requires a positivist perspective. At the same time the literature review also revealed that responsible innovation could also be addressed from a behavioral perspective, focusing on whether innovators acknowledge their responsibility for the broader consequences of their innovations. This approach is epistemologically related to post-modernism and constructivism and tends to explore actors' attitudes, individual observations and mental models. For our field work we chose to follow a positivist approach using checklists to record the social and environmental consequences of the innovation activities and subsequently evaluate and compare the positive and negative externalities. We focused on investigating the consequences of the introduced 'newness' - products, production processes, the use of new materials and value creation. Like in most similar approaches, we envisaged that this approach would allow us to identify patterns in the villages and from this develop a set of key criteria for responsible innovation in an informal economic context.

3.3 Empirical evidence about responsible innovation

Duong Lieu cassava products village

One group of the economically-active village population is involved in home-based cassava starch production, an intermediate product which another group of small producers traditionally used to produce noodles. In more recent years several of these small producers have introduced new end-products which add more value. These include medicine pills, soft drinks, boxes and candy. Candy production has been quite a success story for households, giving them better incomes. Candy production also involves much lighter and quieter work, in contrast to the harder and dirtier tasks associated with starch and noodle production. But candy production requires some investment and so is not an option for the poorest of the poor. This said, the poor can benefit from the new product as the candy industry creates extra employment and there is a shortage of workers in Duong Lieu.

There is also an emerging pollution problem in the village. New end products have increased the demand for starch, resulting in more organic waste being discharged into the open sewage system. Several government research centers and NGOs have carried out environmental impact studies in Duong Lieu which indicate a worrying environmental situation. Some people in the village link high rates of cancer cases to the pollution.

Bat Trang ceramics village

Over the past eight years, small producers have introduced LPG kilns for baking ceramics. The new technology enabled higher production volumes, higher quality ceramics (which can be exported) and saves on energy costs. Small producers acknowledge that the innovations have increased household incomes and improved the quality of life. There is less air pollution and the working conditions in the workshops are greatly improved. The innovators have created surplus value in the village and new employment opportunities for poorer people. The improved competitive advantage made it possible to access new (international) markets. Poverty was common in Bat Trang twenty years ago, but today poverty rates are below average for the province and far below the national average. According to the village's administration, unlike other craft villages in the Red River Delta, the gap between rich and poor in Bat Trang has not widened.

A number of poor household enterprises in the village - lacked the means or capability to purchase the new LPG technology and had to close down their business. However, this is not

perceived as a major issue since many of them found employment in the innovating enterprises. The production of ceramics - both traditional and in LPG kilns - requires special skills and experience and there is a shortage of skilled employees in the village.

The new production process has led to a significant improvement in the village's living environment. The LPG kilns emit less pollution than the charcoal kilns. People believe that the smoke and air pollution from traditional charcoal kiln in the past were responsible for many cases of respiratory diseases, particularly among older people. Today the air is much cleaner and there are fewer dirty storage areas for charcoal in the streets. According to the villagers, the village is now a greener and a more pleasant place to live.

Van Phuc silk village

Silk weaving families opened retail shops in the village's main street and benefitted from the growing demand for silk products, and began to attract an increasing number of domestic and foreign tourists to the village. By and large the village has taken benefitted from advantage of the new marketing practices although some actors in the value chain claim that the distribution of benefits is unfair. The silk weavers and silk dye workshops in the village enjoy higher and more stable incomes than before, but not to the same extent as the shop owners.

Competition is increasing and the shops have to compete more on price and lower their quality standards. This implies the need for higher production volumes per business in order to survive. At the same time the shop keepers are sourcing products from outside the village (including from China) One-loom households are no longer viable and those that could not expand and increase production volumes had to close down. However most of these people have been able to find new employment in an expanding weaving workshop.

Although the silk shops do not affect the environment directly, increased silk production in Van Phuc has caused serious environmental problems, particularly water pollution. The weaving workshops and shop owners outsource the dyeing to several specialized workshops in the village. The latter use more and more toxic chemicals for the dyeing process to obtain fashionably bright colors. The waste water from this process is discharged directly into the sewage system and river without any treatment. According to many villagers, this results in severe pollution, black river water and new and more health problems.

Phu Vinh bamboo and rattan village

After the introduction of the free-market economy in Vietnam, entrepreneurs established export companies just outside the village. When they sign an overseas contract they outsource the actual production to middlemen in the village who in turn sub-contract the order to household enterprises scattered around the village. The small producers do the weaving and deliver the semi-finished rattan and bamboo products to the middlemen and export companies who then do the final coloring and varnishing, as the last step before shipment overseas.

For the export companies and middlemen it is very profitable business. However, the innovation has worked to the disadvantage of the small household enterprises. They get a lower unit price, have to work harder and more family members are now involved in the production work (including children who work after school and old people) and they still earn less than before. These changes are driving the small producers into poverty and making them feel marginalized.

New environmental problems have also emerged. To meet international quality standards and design requirements, small producers, middlemen and export companies now use more chemicals to whiten, soften, color and dry the bamboo and rattan. The waste water - containing harmful concentrations of chemicals - is usually discharged untreated into the surface water with no consideration about the effects. Nobody knows the exact level of pollution or what health impacts can be expected. Another emerging problem is the depletion of rattan and bamboo as a result of the increased production volumes of recent years.

In the past the rattan/bamboo products used to have a practical use (as household utensils). Now they have become a more luxury decorative product. Products today are sold to a higher segment of the market, particular the western export market. Consumers in Europe and US enjoy the consumer surplus value but these products are no longer affordable for traditional clients in the domestic market.

3.4 Interpreting the consequences of innovation

The innovations in these Vietnamese villages have led to a diverse range of social and environmental consequences, as summarized in Table 3.1. The first column of the table lists the most notable issues we identified within each particular village, through field observations and villagers' reports. The second column lists our assessment and judgment of the positive and negative externalities to be validated later in subsequent discussions with the villagers. The last column categorizes these empirical observations in terms of the theoretical clues.

Table 3.1: Summary of economic, social and environmental outcomes.

Cases	Outcomes and consequences of innovation	Assessment of externality	Theoretical category and references
Bat Trang (Ceramics)	- Cleaner air	+	Environmental – newness (Blackman and Bannister 2004, Chang 2011)
	- Better labor conditions in the workshops	+	Social – newness (Ewing 2006)
	- Employment creation	+	Social – newness (Drucker 1981, Pianta 2005)
	- Equitable distribution of value; poverty alleviation	+	Social – value creation (Bigsten and Levin 2000, Hart and Milstein 2003)
	- Better quality products with longer product use cycle	+	Environmental – value creation (Bartlett and Kurian 1999, Hertwich 2005)
Van Phuc (Silk)	- Increased water pollution due to chemical use	-	Environmental – newness (Roome and Hinnells 1993)
	- Increased sales, benefiting many in the village	+	Social – value creation (Bigsten and Levin 2000, Hart and Milstein 2003)
	- Employment creation	+	Social – newness (Drucker 1981, Pianta 2005)
	- Uneven distribution of value creation	-	Social - value creation (Bigsten and Levin 2000)
	- Lower quality products, shorter product use cycle	-	Environmental – value creation (Bartlett and Kurian 1999, Hertwich 2005)
Dong Lieu (cassava candy)	- New income and employment	+	Social – value creation (Lindfelt and Törnroos 2006)
	- Sweets are not healthy for children	-	Social – newness (Bhattacharyya and Kohli 2007)
	- Good business accessible to villagers	+	Social - value creation (Pianta 2005)
	- Better labor conditions in the workshops	+	Social - newness (Ewing 2006)
	- Severe water pollution from increased starch production	-	Environmental – newness (Roome and Hinnells 1993)
Phu Vinh (Rattan)	- Older people/children do a significant amount of work	-	Social – newness (Ewing 2006)
	- Increased pollution from chemicals used	-	Environmental – newness (Roome and Hinnells 1993)
	- New poverty in the village; small producers earn less	-	Social – value creation (Bigsten and Levin 2000, Hart and Milstein 2003)
	- More transport environmental costs to remote markets	-	Environmental – newness (Curtis, 2005)
	- New products only for export. No BOP products	-	Social – value creation (Pralhad, 2005)

Table 3.1 shows a mix of key issues within each particular village which are categorized according to the theoretical clues from the literature review. Some are environmental concerns, such as air and water pollution, others relate to social issues: labor conditions, income disparity and health. Some were the consequence of newness; others the result of innovative ways of value creation. At first glance, there are only positive externalities in Bat Trang, while Van Phuc and Duong Lieu faced mixed positive and negative externalities. In Phu Vinh the consequences were mostly negative. This highlights two issues that are relevant to our initial research question regarding the conceptualization of responsible innovation in the Vietnamese small producers' reality. Firstly, it leads us to ask if the identified issues can help us to develop a checklist of generic criteria to which threshold values might later be added to distinguish responsible innovation from what it is not. Secondly, it suggests that one village - Bat Trang - might be categorized as pursuing a path of responsible innovation, while the other villages are not.

In regard to the first issue, although the villages appear comparable in terms of their innovative activities, the social and environmental consequences of innovation in the four villages were very different and no clearly identifiable patterns could be discerned. A diverse variety of issues emerged in the different villages, confirming the multi-faceted nature of responsible innovation. We tried to translate these and reduce this multi-dimensional reality into a simplified and comparable set of criteria. In so doing we immediately faced the problem of which criteria to include and which to exclude and what weight to give to each criteria (i.e. which ones were critical and which were less essential). A long list of criteria would not contribute to conceptual clarity, let alone provide practical and feasible measurement tools. An additional consideration here is that the key outcomes of the innovations have both quantitative and qualitative aspects. The qualitative outcomes include labor conditions, the quality of products and the living environment, the position of employees, and the consequences of innovation for cultural and traditional values. It is difficult to measure these criteria in an objective positivist fashion, as they are largely socially constructed, context specific and involve multiple-realities, making it very difficult to compare such criteria (Adcock and Collier 2001). We concluded that developing a criteria checklist involved making impossible (or at least unjustifiable) decisions about which criteria to select and what threshold values to apply to these criteria.

In regard to the second issue, from our perspective as western researchers, we are inclined to assert that Bat Trang village could be labeled as experiencing responsible innovation. However, during our discussions in the field, we were confronted with conflicting views of innovators and villagers in the other villages; some judged the negative externalities in a different way than we

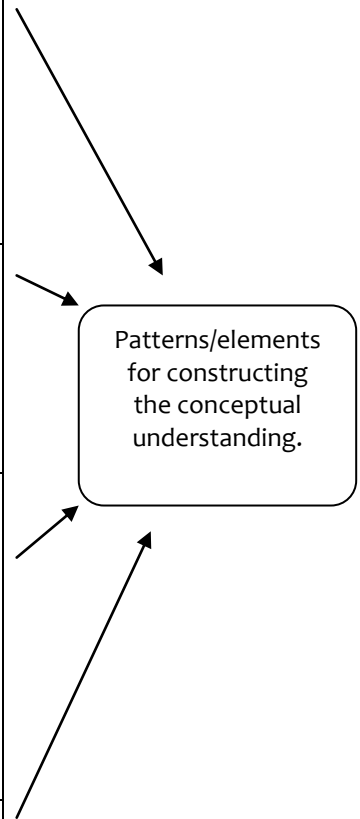
did. In Duong Lieu and Van Phuc many villagers said that they were not so bothered by the negative consequences of the innovation, since it also brought increased prosperity. They considered the emerging pollution problem as an acceptable trade-off for the benefits of the innovation. An overview of illustrative quotes is provided in annex B to this chapter.

In Phu Vinh, we discussed our tentative conclusion with regard to the practices that our normative framework (reflected in universally agreed ILO conventions) saw as child labor. This observation was perceived differently by the villagers, which led to the second issue; that any attempt that we - as researchers not living in the village - might make to define threshold values for these criteria, would involve imposing a normative framework about what is acceptable and what is not. We faced an epistemological challenge that is inherent to the positivist approach which assumes 'one reality' and seeks to establish one set of universally applicable threshold values: perceptions of the relevance (and legitimacy) of these thresholds may vary considerably, according to the situation of the people concerned. Since sustainable development is intended to be participatory it is essential to include the judgments of the involved actors (in this case the villagers).

This made it impossible for us to firmly assert that the innovations in Van Phuc, Duong Lieu and Phu Vinh could not be viewed as responsible innovation. For the direct stakeholders, a negative externality could be compensated by economic benefits or other positive externalities. Perceptions about the benefits, costs and trade-offs between them can change over time, due to new insights or (social) learning. All these observations are critical in influencing how villagers and innovators respond, how they behave and how responsibility is acknowledged. Thus the actual contrasts between positive and negative externalities were not very helpful for conceptualizing responsible innovation. Table 3.2, below, provides a summary of the externalities and how they are perceived by community members, how these perceptions have evolved and changed over time and the extent to which community members feel that negative externalities are compensated by the positive ones.

Table 3.2: Community members' perceptions of externalities.

	Observed externality	Perceptions in community	Implication for responsible innovation understanding.
Positive externality	<p>Bat Trang In the past the charcoal kiln created heavy pollution.</p>	<p>The pollution was increasingly considered as a negative externality, which was at a point in time not compensated by the incomes and other positive externalities. A societal conflict emerged. The small producers acknowledged responsibility and introduced LPG kiln technology.</p>	<p>There is a situation in which the community does not accept harmful outcomes anymore and puts pressure on the one causing the problem. The producers/innovators then either do or do not acknowledge responsibility.</p>
	<p>LPG kiln with cleaner technology resulted in a cleaner environment (air)</p>	<p>Clean air was perceived as a positive externality by all in the community members on top of the economic benefits. All community members see the link between the innovation and the cleaner air.</p>	<p>There is a phase in which a societal change is perceived as a result of the innovation.</p>
Negative externality	<p>Duong Lieu The increased production of starch for the new products created water and soil pollution</p>	<p>For most innovators and most villagers it is clear that the water and soil pollution are externalities of innovation. These are sufficiently compensated by the value created and other positive externalities. Moreover, the small producers did not want to know about the impacts of the harmful outcomes.</p>	<p>There is a situation in which the innovators and villagers see the pollution and the link with innovation, while they do not consider it as such an issue. The negative externalities are being compensated by positive externalities; a trade-off situation.</p>
	<p>Van Phuc The newly introduced shop resulted in increased silk production and use of chemicals disposed in the sewage system</p>	<p>The pollution was initially not viewed as a problem because of positive externalities (income security and stability) of the innovation. However, over time negative health consequences have appeared. A conflict is emerging among the villagers in interpreting and valuing the pollution. This was complicated because the exact link with the innovation is not clear (other industrial activities around that may cause the pollution). Is it an externality of the silk marketing innovation?</p>	<p>There is a situation in which harmful societal changes are surfacing, although there are questions about whether or not these are linked to innovation. There is an emerging and inevitable conflict.</p>
	<p>Phu Vinh The export companies' monopoly enables them to negotiate the price down for small producers. There is new poverty in the village.</p>	<p>The small producers perceive this an uncompensated negative externality of innovation. The export companies enjoy the economic benefits and do not see it as such a problem, but as part of the new economic reality. This is creating conflict in the village.</p>	<p>There is a situation in which there is a conflict and the innovators do not acknowledge responsibility. Rather they behave opportunistically. The local government is aware of the situation but not effectively mediating in this ongoing conflict.</p>



In sum, our interpretation of the data that we collected led us to a position that differed from the one we initially envisaged. The serious methodological and measurement problems (discussed above) led us to doubt the feasibility of developing a defensible outcome criteria checklist. Although we do not exclude the possibility that such a positivist generic checklist might be developed in the future, we could not see a feasible way of doing so and so opted to change course. While Brundtland (1987) sought to address the problem of conflicts between environment and development goals by formulating a definition of sustainable development, our literature review showed that responsible innovation could be more usefully viewed in terms of acknowledging responsibility in societal conflicts - a recurrent theme within the literature on CSR, business ethics and stakeholder analysis. This led us to conclude that a constructivist approach, exploring how social interactions lead innovators to acknowledge responsibility for emerging societal conflicts that are the consequences of an innovation, might provide a more fruitful way to conceptualize responsible innovation. These provided us with the idea of using the societal process of acknowledging responsibility to resolve societal conflict as a means to understand and evaluate socially responsible innovation. Our rationale for this decision and our efforts in this direction are discussed in the next chapter.

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ANNEX B (to chapter 3): Interview quotes exploring responsible innovation outcomes

Interview quotes Duong Lieu:

“The pollution is worst during the autumn, the production season for canna and cassava. We discharge the cassava and canna residues into the open sewage system.” - Household producer of starch in Duong Lieu (May 2010)

“There is terrible pollution here. It is deep in the ground. There is more disease in the village.” - Villager (May 2010)

“The journalists talk badly about us and harm our business. We don’t want to see journalists here. We don’t mind the pollution and it is our living.” - Cassava starch producer (May 2010)

“There are many old men and women in the village so the pollution cannot be that serious. The whole village is involved in starch and noodle production and I do not think that many people complain about the cassava residues.” - Old man in the Pagoda (May 2010)

Interview quotes Bat Trang:

“LPG ceramics production technology provides a stable income for the households and a much cleaner environment.” - Village administrator (November 2009)

“The conditions in the workshop are much better. There is clean air and light and it is not smoky anymore.” - Worker in workshop (November 2009)

“Almost 15 years ago Bat Trang was reported to be one of the most polluted places in the Red River Delta. It is a pleasant place to live now thanks to the LPG technology.” - People’s Committee member (November 2009)

“The atmosphere in the village is more positive and friendly than 10 years ago and everybody benefits from that.” - Ceramics producer (November 2009)

Interview quotes Van Phuc:

“The new shops brought prosperity to the village. The shop owners earn most but our incomes are more stable now.” - Weaver in household workshop (November 2009)

“We used to produce high quality. The production capacity was low but the product used to be very special and of high quality. Nowadays, the clients want cheap silk. Our tradition and skills are getting lost now the high quality is not produced anymore.” - Retired silk weaver (November 2009)

“The environment is good, there are only a few pollution problems around the dye households.” - Young lady in a coffee shop (May 2010)

“In the past we were happy with the income but now we see that pollution is becoming very serious. Nowadays 80% of people here die from cancer - because they drink the dirty water or work directly with dyeing.” - Villager in the same coffee shop (May 2010)

“I worked with dyeing since childhood and never had any problem. We use more chemicals today because the silk producers ask us for shiny colors. I do not think that the waste water is very dangerous.” - Lady working in dye workshop (May 2010)

“The water pollution is a very serious problem in the village. We know many cases of cancer and we think that the pollution is causing this.” - People Committee member (May 2010)

Interview quotes Phu Vinh:

“Time and again the export companies negotiate the price down through the middle men. In the past bamboo and rattan weaving provided a good income for the family, now it is not reasonable anymore.” - Rattan weaver in household (May 2010)

“I made a profit, as expected, since I started in 1997. The business was good until 2008. The household producers always complain about the price.” - Owner of export company (May 2010)

“A small producer in the village earns 8,000 VND per item while the export company earns 50,000 VND per item.” - Middle man (May 2010)

“Older people and children do most of the work these days. The men have to look for jobs elsewhere because the rattan weaving hardly provides an income to live on.” - Female rattan weaver (May 2010)

“It is not a problem that children work at home. In Vietnamese culture it is normal that children work in the family and household business.” - Rattan weaver (May 2010)

“Small producers cannot sell the products through other channels. The export companies finish the products with paint and varnish. The small producers do not have the technology to do this.” - People’s Committee member (May 2010)

Chapter 4

RESOLVING ENVIRONMENTAL AND SOCIAL CONFLICTS - RESPONSIBLE INNOVATION IN SMALL PRODUCERS' CLUSTERS IN NORTHERN VIETNAM

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4.1 Introduction

Corporate social responsibility (CSR) and stakeholder analysis have increasingly become part of business operations as built-in, self-regulating mechanisms through which businesses monitor and ensure their adherence to the law, ethical standards and international norms. The idea of responsible business originated in the UK, Europe and the USA in the nineteenth century out of a sense that business inherently involves relationships between people and between people and resources (Halme et al. 2008). Early academic writing on CSR and stakeholder analysis reflected concerns about the duty to respect direct stakeholders' environmental and social interests. These often focused around issues such as labor conditions and housing or funding local events, scholarships and clean-up campaigns (Bowen 1953, Frederick 1960, Freeman 1984, Donaldson and Preston 1995, Carroll and Buchholtz 2002). However, until the 1990s, CSR and the stakeholder approach had only a limited influence on the private sector and relatively few business actors actually followed such practices.

In recent decades the world has developed into a global village. Brundtland (1987) articulated the concept of sustainable development, which governments, multilateral organizations and civil society further consolidated into Agenda 21 (United Nations 1992). These reports advocated forms of development that would meet the needs of the present generation without compromising the ability of others around the planet - including developing countries, and future generations - to meet their needs. Sustainable development therefore has a global perspective of integrating environmental, social and economic concerns. The central principles of this concept are those of anticipation, precaution and the recognition that, when scientific investigation has

found a plausible risk, there is a social responsibility to protect the public from exposure to harm and avoid conflict (O’Riordan and Cameron 1994).

CSR has developed alongside the global changes of the past 20 years. During this time business actors have become more integrated in global value chains and often transferred production to low-income countries that opened up for foreign investment (Gereffi et al. 2005). The formation of the Business Council for Sustainable Development, and its book *Changing Course*, signaled a business input to the debate on sustainable development (Schmidheiny 1992). This was followed by a series of emerging conflicts between business and social actors in the 1990s, such as Brent Sparr, Exxon Valdez, Enron and Nike. The idea that sustainable development is a valid concern for business became more and more accepted (Elkington 1999). The widespread adoption of information technologies capable of spreading information about the societal impacts of businesses has allowed a broader public to become involved. Leading authors of that time argued that business - more than government or civil society - is best equipped to lead the world towards a sustainable world (Hart 2007). A business should not just behave responsibly in its home country; but also be concerned about the social and environmental interests of distant stakeholders, including those in developing countries. Prahalad (2005) suggested that sustainable business offers opportunities for large companies as well as for the four billion poor people at the bottom of the pyramid. These evolving notions have led corporations to adopt a broader view of CSR and a greater concern for stakeholders than under the narrowly conceived interpretation of the firm as a pure economic actor. This implied some profound strategic adjustments to the *modus operandi* of companies in response to global environmental pressures, conflicts and changing societal expectations (Jamali 2006).

Although the idea of stakeholders and the notion of CSR have gained ground, there is still controversy about the underlying concepts. Commentators today, both critics and proponents of the approach, often disagree about the nature and scope of CSR, partly because they share different perceptions and understandings of the role and purpose of the business in society (Idemudia and Ite 2006). CSR has become a heterogeneous concept which combines elements of sustainability, corporate governance and corporate accountability to stakeholders.

Despite the unclear understanding of what CSR actually means in theory (Roome 2004), there is a generally agreed and utilized set of practices within the Western business community that aim to ensure corporate responsibility in activities, outcomes and communications. In general, these practices include the specification of a vision and mission of CSR for a company, the structuring of CSR activities from policy to practice within its organization, formulating measurable

performance targets in terms of environmental and social aspects and communicating CSR reports to the public (Hockerts 2008). These activities may be accompanied by a process of stakeholder engagement that takes on any number of roles from defining the content of a CSR policy, reflecting on performance and reporting or helping the company foresee its future context. CSR thus involve an expert system, foresight studies and a predefined implementation process, responsibility protocols, goals outcome criteria and indicators. In practice, CSR and the stakeholder approach has become a *project* led by the corporations themselves as the central actors. An illustration of this type of such *projectification* (Midler 1995) of CSR practice is the response of sports apparel producer Nike after it faced a storm of criticism in the 1990s over child labor practices by its Asian suppliers of footballs. The Nike Board set up a department focused on compliance and social responsibility. This department investigated the long-term implications of the company's product design and manufacturing decisions. It developed a new vision, targets, an in-house index to measure product design and operation and agreed on a code of conduct to ensure the transparency of its supply chain operations while developing standards for workplace conditions for overseas suppliers. Reports of Nike's corporate responsibility performance and strategy are openly communicated via various channels to the public and the stakeholders.

Operationalizing CSR in a global context, particularly in developing countries, implies the need to involve a much broader range of stakeholders with different agendas, cultures, ideas and normative reference frames than is the case for a domestic company. Some of these additional stakeholders are outside of the direct vision and 'sympathy range' of the Western public. In developing economies the economic, social, environmental and governance context is often less familiar and seems more complicated and difficult to understand. Reports of the problems faced by Shell in Nigeria and the emerging environmental issues in China demonstrate the difficulties of operationalizing CSR in such contexts. Companies struggle to grasp the local agenda and incorporate it within their *license to operate*. Theories about CSR and stakeholder participation have usually been developed within formal business organizations operating within Western economies with relatively stable institutional and procedural systems. These CSR and stakeholder practices do not seem to involve approaches or perspectives that can automatically be applied in developing country contexts. Quazi et al. (2007) state that CSR is more relevant to corporations operating in developed countries due to higher community expectations for socially responsible behavior; societal expectations in the developing countries mainly centre on economic growth. Visser (2008) observed that CSR in developing countries is most commonly associated with philanthropy or charity.

That said, our recent research in Vietnam shows that there are institutional structures and mechanisms in place in developing countries that drive business owners to acknowledge their broader responsibilities and take environmental and social concerns into account, even though these do not readily correspond to the institutional structures or principles found in developed economies. We found evidence of these structures and mechanisms in our research into examples of innovations among a number of informally organized small industrial clusters in the Red River Delta in rural northern Vietnam (Voeten et al. 2011). These innovations improved the competitive position of producers and contributed to the economic development of these poor communities. The innovations also generated a range of outcomes or impacts that extended beyond the purely economic. These included both positive and negative effects on different members of the community. For example one beneficial effect of innovation was the use of less polluting and more energy-efficient technologies in manufacturing. On the negative side, small-scale producers and others living in the villages experienced new pollution problems and an uneven distribution of benefits arising from the innovations. During subsequent investigations, the innovators in some Vietnamese villages expressed how they acknowledged and then took some responsibility for the newly emerged problems resulting from the innovation, while innovators in other villages did not.

The Vietnamese cases show that while innovations by small businesses at community level in developing economies are often seen as desirable, because they contribute to development and the accumulation of wealth at the local level, they can also generate negative impacts in the community and its environment. The research presented in this chapter explores whether and how the innovators acknowledge responsibility within these informal contexts. Actually, these types of production systems run by poorer groups are highly representative of the small-scale economic production found in developing countries. The specific aim of our research is to conceptualize the nature of *responsible innovation* in the Vietnamese small producers' clusters and understand the extent to which Western notions of CSR and stakeholder analysis theory and practice apply in these settings.

We applied *grounded theory* (Glaser and Strauss 1967) as the research methodology to provide for the inductive exploration of a number of cases of innovation found at the community level in Vietnam. We opted for this research approach because it allowed us to conceptualize responsible innovation without being limited or steered by preconceived analytical frameworks, given the reservations discussed above about the applicability of projectified CSR and stakeholder theories in the institutional setting of developing countries. Grounded theory is not only a descriptive

research approach. It also has explanatory powers, allowing us to advance theoretical propositions about societal processes at work (Birks and Mills 2011). It involves organizing and presenting empirical findings as case studies, allowing rich investigation of contexts, perceptions, mechanisms, resources, conflicts, power relations and institutions (Yin 2003).

Through information-oriented sampling (Flyvbjerg 2006) we selected four cases of craft villages in northern Vietnam (Table 4.1). These cases shared several characteristics in common: they were all craft villages organized as small producers' clusters where the producers themselves had introduced small-scale low-tech innovations (Voeten et al. 2011). Moreover, the villages are all situated in the vicinity of Hanoi, and their demographic compositions, workforce, accessibility, policy, governance and administrative contexts are all similar to one another. Yet the cases are heterogeneous in the sense that they produce distinct types of craft products and introduced different types of innovations and these led to various environmental and social outcomes, which were differently perceived and addressed.

Table 4.1: Craft villages cases, innovation and outcomes.

Case - village	Types of innovation	Social and environmental consequences
Van Phuc - silk	New marketing	Emerging environmental problems
Bat Trang - ceramics	New Liquefied Petroleum Gas (LPG) kiln technology	Less air pollution
Duong Lieu - cassava	New cassava-starch end products,	Ignored environmental problems
Phu Vinh - rattan/bamboo	New export markets	Widening income gap among small producers

A team of Dutch and Vietnamese researchers collected data in the Vietnamese villages in November 2009 and May 2010. The research focused on the various outcomes of innovation, the emerging conflicts and whether innovators acknowledged responsibility in conflict resolution. The team collected a broad array of quantitative and qualitative material through observations and open, in-depth interviews with 20 - 30 households per village. Additional interviews were held with local officials, clients and other resource persons in the villages and in Hanoi, including Vietnamese research institutes, NGOs and government agencies. The team combined positivist approaches and categories with more naturalistic and constructivist-based information that centered on the perceptions of the different actors on what was taking place. The data collection was an iterative exercise involving observations and interviews in the field, transcribing, discussing and interpreting the interview recordings and then further refining, coding and

analyzing the data before the second round of data collection, in line with the research procedures of grounded theory.

The following section presents the empirical part in four case descriptions. We subsequently carry out a comparative analysis and use this to develop a five-stage model that presents our conceptualization of responsible innovation as it took place in the case studies. We associate the model with a range of theoretical ideas so as to position the model in a broader theoretical context. The idea is not to use the theoretical associations to support the model, rather the theoretical embedding serves (i) to demonstrate the multifaceted nature of responsible innovation, (ii) to avoid reinventing conceptualizations that are insensitive to existing theories; and lastly, (iii) to provide pointers for framing further research. In the concluding remarks we underline the key differences between *projectified* CSR and the stakeholder approach and our understanding and interpretation of responsible innovation as a societal process in this developing country.

4.2 Case Studies: Four small producers' clusters in Vietnam

Van Phuc

Van Phuc is a silk craft village, west of Hanoi, with a long history of high-quality silk weaving. Historically, middlemen and later state-owned enterprises, handled the distribution of silk products to the domestic market. Following government reforms that introduced the free market economy in the 1990s, silk-weaving families started to open retail shops and benefit from the growing demand for silk products and attracted an increasing number of domestic and foreign tourists to the village. The retail shops have stimulated the silk industry in the village and brought prosperity, particularly between 2001 and 2008. The silk weavers and silk dye workshops enjoy higher and more stable incomes, but not to the same extent as the shop owners. The village administration receives more taxes and rent for land and this has increased the money available for public spending.

The coming of the retail shops has led to a change in the approach towards quality; there is now more demand for lower-priced silk, implying a lower quality. The lower prices and higher production volumes meant that the small household production units have had to increase productivity, but several of them were unable to do so. As a result, a number of household enterprises closed down. This was not considered to be such a big issue in the village since most weavers had specialized skills and swiftly found employment in the workshops that were

expanding. The increased production volumes and new products - designs and colors - also meant an increased use of chemicals, particularly in the dyeing process. For years, the dye workshops have discharged untreated waste water from the dyeing process into the open sewage system. Today villagers, research institutes and the local administration have all expressed great concern about the surface water quality in and around the village. More and more people in Van Phuc consider the pollution as a serious threat to the village and associate it with the occurrence of more serious and fatal diseases. Most dye workshops owners are less concerned and see the pollution as a fact of life and an acceptable consequence of making money in the silk industry.

Villagers link the pollution to several textile-related companies around the village that discharge polluted waste water. However, the precise sources of the pollution - from the village or the factories around - are not clear, and neither are the impacts on human health. Research institutes have examined the pollution and its impacts and produced several scientific articles on the matter. However, the villagers do not have access to straightforward and practical information about the origin and effects of the pollution or possible solutions to the problem.

There is a growing mood in the village that the pollution is a problem that violates people's right to live in a safe environment. However, the general attitude among the small producers and shop owners is that the problem is an acceptable trade-off for increased economic prosperity. The dye workshop owners do not want to take any action to change their practices. As individuals, they consider themselves as small players in a larger complex. The small producers assume that pollution in Van Phuc - which comes from many sources - can only be addressed by the government and that it is the government's responsibility to do something about it. The villagers feel some sympathy for the dye workshop producers and do not blame them for the pollution. They recognize that these workshop owners are poor and trying to survive.

The richer shop owners do not see themselves as having a responsibility to solve the problem. The main street - where they have their shops - is some distance from the polluted areas. However, they do see that the pollution will eventually have an adverse effect on tourists coming to visit the village and that does worry them.

Small producers and other villagers are looking to the government for a solution. The village administration is assuming responsibility and developing plans to move the polluting workshops to a location just outside the village where they will be concentrated and provided with a waste water purification plant. The dye workshops, weavers, shop owners and villagers consider this to

be a solution and do not feel the need to take further action. They also like the idea of developing new land outside the village, more because they are currently facing a shortage of land than because it will address the problem of pollution. While the local administration has developed plans, it is not evident how these will be implemented. The funding is not yet secured and there are complicated legal issues involved.

Phu Vinh

Phu Vinh is a village south of Hanoi where household production units have produced rattan and bamboo products for more than 300 years. Until a decade ago they mostly produced household items, such as baskets and bins, for everyday use. These were mostly sold on the Vietnamese market. Before the end of the cold war and the collapse of the eastern European communist bloc, these products were exported to communist nations under bilateral trade agreements.

After the introduction of the free-market economy in Vietnam in the 1990s and the implosion of socialist cooperation, the government established new enterprise and export legislation, allowing private enterprises to enter into export contracts with Western countries without restrictions or government involvement. Entrepreneurs from the village and Hanoi saw new opportunities and started to establish export companies just outside the village. The business became prosperous, particularly between 2001 and 2009, with exports principally going to new and lucrative markets in USA, Canada, France and the Netherlands.

Once an overseas contract had been signed, the export companies outsource the work to middlemen in the village who in turn subcontract the order to household enterprises scattered around the village. The small producers do the actual craft work (weaving) and deliver the semi-final rattan and bamboo products to the middlemen and export companies who then do the final coloring and varnishing, as the last step before shipment overseas.

While the export companies have enjoyed handsome profits the system has brought less prosperity for the small-scale producers. To maximize their profit in a free market system, the export companies have increasingly imposed lower unit prices on the small producers.

Today, the small-scale producers get only half the unit price for their rattan products that they did five years ago. Today a small-scale producer earns on average 20,000 VND/day (0.87 euro). This has created conflict between them and the export companies. The producers complain about the lower unit price and increasingly suffer from poverty. Today, 13 percent of the population in the village lives under the government-defined poverty line. Weaving is mostly

done by older people and children, while young able-bodied workers look for employment elsewhere.

New environmental problems have also emerged. To meet international quality standards and design requirements, small producers, middlemen and export companies now use more chemicals to whiten, soften, color and dry the bamboo and rattan. The waste water - containing high concentrations of chemicals - is usually discharged into the surface water with no concern or consideration about the effects. Nobody knows the exact level of pollution or what health impacts are to be expected.

Another emerging problem is the depletion of rattan and bamboo as a result of the increased production volumes of recent years. In the past, small producers, middlemen and export companies were not concerned about a possible depletion. Today the problem is evident for all to see and input prices have risen sharply. The small producers, middlemen and export companies involved did not do anything to address this issue until 2009.

The export companies take a hard-line business attitude and do not see that they have a role to play, or a responsibility to modify unit prices to reduce poverty. They see poverty alleviation as the role of the government. The small-scale producers have a different view and blame the export companies for offering such low prices, arguing that they could share more of their profits.

The village administration recognizes and sympathizes with the problems of poverty faced by the small-scale producers, yet is unable to interfere with the economic process and the free market price setting mechanism. In addition, they are closely connected - through family ties - to the export companies. In recent years, the export companies have helped the local authorities to construct a school and a medical clinic, have planted trees and provided tables and computers for the administration's offices. The local government has facilitated the procedures for renting land and completing export license procedures.

There are limited opportunities for interactions between these different actors. There are no village meetings where all the parties involved can come together to discuss the issues of poverty and the environment. The export companies receive government support to organize training for the small-scale producers (weavers) so that they can learn about new designs, but do not listen to their complaints about low prices. The small-scale producers have attempted to unite and to set up an association but this did not succeed due to the many conflicts of interest in the village.

Duong Lieu

Duong lieu is a traditional craft village that has been producing cassava and canna noodles for decades. Within the village, production is divided into households that produce starch - an intermediate product from cassava and canna - and households that produce the noodles from starch.

Some 10 years ago, small-scale producers and medium-sized companies around the village started to look for alternative products to add more value. These alternatives included medicine pills, soft drinks, cardboard boxes and candy. Candy production has been particularly successful in helping noodle producers generate a better income.

Over the past seven years, these new products started to generate more income than noodles. Although not anticipated, people also found that the work was cleaner and lighter than noodle production. Moreover, these new products produce hardly any environmental pollution. By contrast, the starch producers in the village discharge vast amounts of organic solid waste from peeling the cassava and canna and discharge the waste water into the open sewage system. The amounts of waste have been increasing over past years as a result of the increased demand for starch for the new products. The starch waste is becoming an increasing source of debate and conflict. Many of the villagers - particularly the starch producers - ignore the problem and consider it as a trade-off for their livelihoods. But more and more villagers are bothered by the pollution and concerned about the health impacts and link the pollution to several diseases that have recently become more common. Research institutes and NGOs have carried out environmental impact studies and negative reports about the environmental situation have been presented in the media. The villagers are worried and somewhat irritated about this as they think it will have a negative impact on demand for their products.

The household enterprises involved in producing the new products consider the waste issue to be the problem of the starch producers and do not see that they have any role to play in addressing this issue. They ignore the potential to allocate some of the wealth they create by producing candy to pay for the environmental damage it causes. The village administration has welcomed the idea of alternatives to polluting starch production, such as other types of economic activities that do not involve starch.

Bat Trang

Bat Trang village, situated east of Hanoi, has been a traditional ceramics craft village for centuries. In the old days, small producers in the cluster produced a variety of ceramic items in traditional pottery kilns, fired with wood and coal. This resulted in severe air pollution: the roads and alleys in the village were covered in black dust from the kilns and a smoky haze hung in the air. By the 1990s, Bat Trang was reported as being one of the most polluted villages in the Red River Delta.

The inhabitants and village administration became aware of this environmental problem and were concerned about the many cases of lung diseases and other respiratory health problems. The small-scale producers worked together with the local authorities and NGOs to try to develop alternative firing methods. In 1997 the village administration and the GTZ, the German Agency for International Cooperation, organized a workshop on business development and the introduction of new kiln technologies that would improve quality, increase competitiveness, use less energy and produce less air pollution. Early innovators took up these ideas and purchased a Liquefied Petroleum Gas (LPG) kiln from Japan for initial trials. They also experimented with improved kiln technology from South Korea and Taiwan. By 2001 - 2002 the LPG technology was working well. Today there are companies in Bat Trang assembling a modified version of the LPG kiln and two-thirds of the small producers in the village have switched to this technology.

Early innovators mention that personal profit was not the only reason for developing the technology. They also took the environmental situation into account and wanted to promote the image of Bat Trang as a ceramics village based on family traditions. The villagers, and particularly those involved in the ceramics industry, see that the introduction of LPG technology has brought a variety of positive outcomes. As expected, the innovation resulted in a better quality of ceramics and LPG uses half the energy of a charcoal kiln, saving substantially on energy costs. The improved competitive advantage made it possible to access new (international) markets. Poverty in Bat Trang was a common phenomenon 20 years ago, but today poverty rates are below average for the province and far below the national average. According to the village's administration, the gap between rich and poor in Bat Trang has not widened, something which has had occurred in other craft villages in the Red River Delta.

The new technology also brought positive environmental outcomes which were quickly noticed. There was a dramatic improvement in air quality: much less smoke is emitted these days and black dust is now almost absent in the village. Villagers report, with satisfaction and a certain pride, that the village is now much cleaner and greener. Over the years a collective process of

becoming more environmentally aware has been underway. Although the profit argument may have been dominant, the small-scale producers also mention that they took environmental considerations into account. Having seen the benefits of the LPG kilns in past years, they are convinced that they have made a difference in creating a cleaner environment for themselves.

The Ceramics Association, established in 2002, has played a prominent role in the introduction of LPG kiln technology. Virtually all the small-scale producers in Bat Trang are members of the association. The association functions as a discussion and exchange platform and actively promotes LPG kiln technology highlighting the environmental arguments. These discussions about the societal implications have come about naturally because the inhabitants of Bat Trang feel strongly connected through family ties and their shared history in ceramic production. In this sense the innovation process was a collective process and the villagers recognized their responsibility, rather than looking to the government for a solution. They have not sought much external assistance to help them move forward.

4.3 Interpretation of the case studies

The case study descriptions show that small-scale producers in all four clusters operate and manage their businesses without the use of preconceived CSR or stakeholder involvement practices prior to the innovation process. The innovations brought economic benefits and the inhabitants of the villages where the innovations took place experienced unanticipated social and environmental side effects, sometimes positive and sometimes negative. The villages had varying levels of formal and informal systems and mechanisms to enable different actors to identify and discuss these social and environmental changes. In some cases the entrepreneurs were in denial about the effects of changing their practices and in others they thought that the trade-off between the benefits they experienced and the problems experienced by others was acceptable. In cases there was open conflict between actors due to the violation of de facto rights, unfair distribution of economic benefits, harming of others' economic interests and changes in power relations. Despite the lack of any formal deployment of notions derived from CSR or processes for stakeholder engagement, we did find evidence of societal processes enabling the community to address the negative environmental and social outcomes of innovation. In the following section we will compare and analyze the different cases, using a variety of theoretical associations to help us to conceptualize and position responsible innovation as a societal process. The case material is supported with quotes from the field.

Perception of societal change

The cases show that the societal process starts with the recognition by the community of a societal or environmental change. There are differences in how villagers perceived these. In the rattan bamboo case villagers are clearly aware of increasing poverty levels among some parts of the community over recent years and consider this to be unacceptable. In the ceramics case more or less all the villagers have experienced improved air quality. By contrast, the social and environmental consequences in the silk and cassava cases are less clear-cut and not commonly agreed upon. Some community members in these villages are aware of increased pollution and see serious health problems emerging, while others do not.

Quotes: Perceptions of societal change.

“Some people complain about the pollution. I do not really see it. We always discharge the waste into the sewer.” - Starch producer, Duong Lieu cassava village (May 2010)

“In the last few years there have been many more cases of cancer in the village. Now villagers are beginning to become aware that we have a serious environmental problem.” - Villager, Van Phuc silk village (November 2009)

“20 years ago in Bat Trang the streets were always filled with smoke and were black from the charcoal. Now the village is much cleaner.” - People’s Committee administrator, Bat Trang (May 2010)

“In the beginning the households were excited about the export companies. In the last five years we have begun to see that they are just bringing us new poverty.” - Rattan weaver, Phu Vinh (November 2009)

The concept of bounded rationality described in economic theory is useful here. It addresses the ways in which human beings perceive, interpret and understand the world around them. Simon (1957) argued that the rationality of individuals is limited by available information, the finite amount of time that people have and their cognitive limitations in interpreting the complex environments in which they operate. In evolutionary economics, in which innovation plays a key role, the theory of bounded rationality is used to describe how human perceptions and understanding, decisions and actions are shaped through conformity to social rules; formal and informal institutions including local traditions, mental models, collective insights and conventional wisdom (Dequech 2001). Despite the increasing evidence about pollution, the villagers in Duong Lieu (cassava) conform to a set of social rules which prevent them from complaining about the pollution. In such a case the intervention of outside parties can play a key role in changing perceptions within a community. A research institution, an NGO or government agency can promote public awareness about longer-term social or environmental impacts.

Government extension programs and campaigns often aim to inform people about harmful societal changes (Demirel and Alkan 2006).

Over the research period, we witnessed changing perceptions among the small-scale producers and community actors, due to them learning and developing new insights. Individuals, groups, or organizations perceive and react to changes in their environment through a process identified by Argyris and Schön (1978) as single-loop learning. Experiential learning - the process of making meaning “through the transformation of direct experience” (Kolb 1984) - was particularly relevant in the daily reality of the case studies. Experiential learning can be both an individual, as well as a joint, process. It is referred to in the literature as a social learning process; as it is often beyond the capacity of any single actor to understand the nature of these emerging societal problems (Pahl-Wostl 2006, Beers et al. 2010). This process is evident among some of the small producers’ clusters. The cases of Phu Vinh (rattan and bamboo) and Bat Trang (ceramics) are good examples of social learning and how a shared perception of a common problem developed. The *community of practice* literature is also relevant here. A community of practice is defined as “a group whose members regularly engage in sharing and learning, based on their common interests” (Lesser and Storck 2001). The Bat Trang Ceramics Association is a clear example of such a community of practice.

There are also differences between the cases regarding the extent to which the communities develop, or failed to develop, a ‘critical mass’ of common perceptions. Once a shared understanding and perception of an issue takes shape among a community, a gradual development of a critical mass of concerned community members occurs; in this way the societal outcome becomes part of the community’s ‘agenda’. This occurred in Phu Vinh (rattan), where the majority of people in the community saw emerging poverty as a societal problem. In Van Phuc (silk) a growing critical mass of awareness about pollution looks set to emerge, but in Duong Lieu (cassava) the new pollution problems are only mentioned by few individuals. The literature refers to such an accumulation of perceptions as a *tipping point*. This concept was introduced by Gladwell (2000) who defined it as “the moment of critical mass, the threshold, the boiling point - the levels at which the momentum for change becomes unstoppable”. That tipping point is usually reached through an *information cascade*, which occurs when people observe the actions/conclusions of others and then arrive at the same perception (Bikhchandani et al. 1992).

Linking innovation with societal change

Once a critical mass of the community has perceived a harmful societal change the cases show that its members will go on to identify its cause. We found marked differences in the way in which the communities linked recent societal changes with innovations. In the rattan case, the community has no doubts that the lower prices offered by the export companies to local producers have resulted in more poverty among small-scale producers. Similarly in the ceramics case, there is general agreement in the community that cleaner air is a result of adopting a new technology. Conversely, the links are less obvious in the silk and cassava candy villages. The scattered workshops over the villages and other local sources of pollution make it difficult to trace who is contributing to the increased pollution and to what extent. Moreover, the innovators in the silk and cassava cases are not actually producing the pollution themselves. The cassava starch producers in Duong Lieu - who themselves did not innovate - pollute more due to the increased demand by the innovative households making new products. This is also the case in Van Phuc where the silk dye workshops pollute more due to increased demand by shop owners, the actual innovators. There is no clear agreement about the exact causes of the pollution because of the complexity of these environmental pathways.

Quotes: Perceptions of the social and environmental consequences of innovation.

“The LPG technology brought us prosperity and clean air. The village is a pleasant place thanks to the LPG technology.” - Ceramics producer, Bat Trang (May 2010)

“There is no doubt that the lower price is the reason for our new poverty problems.” - Rattan weaver, Phu Vinh (May 2010)

“There are many new factories around so it is difficult to know where the pollution is coming from.” - Village administrator, Van Phuc silk village (November 2009)

“Regular research has been carried out but the researchers never came back with the results. Nobody can tell us where the pollution is exactly coming from.” - Dye workshop owner, Van Phuc (May 2011)

“The area around my house is not so polluted. The starch produces some pollution but it is mostly the alcohol factory in the village.” - Candy producer, Duong Lieu (May 2011)

External agencies, such as research institutions, the government and NGOs can also play a role in helping people to better understand the impacts of innovation. Innovation systems theory is relevant here (Lundvall 1992, Edquist 1997). This states that the innovation process takes place in a network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies and research and development (R&D) outcomes. This process usually involves some mechanism to respond to the broader social and environmental consequences of the innovation.

As with perceptions of societal change, learning within the community is instrumental to developing an understanding of links between innovation and societal change. Learning may involve developing new insights into the origin of societal changes. The community has to question the issues that gave rise to the societal changes; if they are able to understand that they are related to an innovation (or another recognizable cause), then second-order or double-loop learning has taken place (Argyris and Schön 1978). The social learning process may resolve information gaps or overload and filter the information required in order to understand whether or not there is a link. Through social learning, actors can begin to see different aspects of a problem and constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible (Beers et al. 2010).

Dissatisfaction with the trade-offs

Once an innovation has been linked to a societal change a community can respond in different ways, as our case studies show. This is particularly evident in the different ways in which harmful changes are weighed against benefits such as prosperity, income, employment and stability, which is in fact a social cost–benefit analysis. For instance, in Phu Vinh (rattan), the small-scale producers are finding the new problem of poverty unacceptable and do not see any compensatory benefits. The result is dissatisfaction and an emerging conflict with the export companies. On the other hand, in Van Phuc (silk) there is a common perception that the new problems of pollution are sufficiently compensated for by the economic benefits of innovation and the community sees the pollution as an acceptable trade-off. A similar story emerges in the cassava candy case, where no overall conflict of interests has emerged about the harmful environmental consequences, which are both contested and sufficiently compensated by the economic outcomes.

Quotes: Trade-offs, acceptable or not?

“Due to the lower prices we have new poverty. Many men have to go out of the village to find a job. We think that the export companies destroyed our traditional business. We are really unhappy with this situation.” - Rattan weaver, Phu Vinh (November 2009)

“We have a stable income but some more environmental problems. That is not too bad. Outsiders tell us that we have an environmental problem. For us it is okay as long as we earn more money” - Starch producers, Duong Lieu (November 2009)

“More and more people think that there is too much pollution. The problem just grew bigger and bigger, we asked the People’s Committee to take action.” - Villager, Van Phuc (May 2010)

“The pollution in Bat Trang became so bad that we as ceramics producers had to take action.” - Early innovators, Bat Trang (May 2010)

Specific actors may not be able to weigh up the situation due to misinformation or limited information about the value of the innovation. This could be the result of the bounded rationality mentioned earlier or a deliberate attempt by the more powerful originators of a harmful societal change to cover up the level of value creation and keep this out of sight, a situation known in economic and contract theory as information asymmetry (Akerlof 1970). Actors that benefit directly from an innovation may keep this information hidden from the community, or provide a misleading picture of the situation. Value-chain theory relates this issue to governance issues (Gereffi et al. 2005, Helmsing and Vellema 2011). The dominant actors in the chain may have the power to hide information and sow discord in order to safeguard their appropriation of value. The export companies in Phu Vinh (rattan), who are reluctant to disclose information about their incomes and profits, are an example of this.

When harmful societal consequences are not compensated for by benefits, conflicts can emerge among people with differing interests and resources (Mills 1959). These can create social structures that reflect the unequal distribution of power and resources in society. In practical terms, these conflicts stem from the perception that one's own needs, interests, wants, or values are incompatible with someone else's (Mayers 2000). They create a social situation in which a minimum of two actors are striving to acquire a set of scarce resources at the same time. Dissatisfaction provides the potential for conflict, also known as the *latent phase* in the process towards conflict (Brahm 2003).

Glasl (1999) shows how parties in a conflict lose the ability to cooperate in a constructive manner as they share fewer common and mutual experiences and lose the links that used to bind them in the past. He identifies several 'points of no return' which contribute decisively to this escalation. Initially, there is a hardening of positions. The content of the conflict becomes the centre of attention, and each party trusts that it will be possible to solve the problem to their satisfaction. In subsequent stages further polarization and debate take place. Small-scale producers in the rattan village have reached the point where they no longer feel that it is productive to talk to the export companies. From this point on the behavior of the parties towards one another is likely to become more negative, as will the images that each party have of each other. As the conflict escalates, the parties slide into a situation where each feels threatened and endangered by the actions of the other. In the last stage of the model, threatening begins and might even lead to violent acts (Libiszewski 1992).

Voluntary acknowledgement of responsibility

When actors in the community feel disadvantaged and conflict arises, innovators can react to these concerns in different ways. The innovators might be sensitive and exhibit altruism or feel a sense of responsibility for the outcomes and arrange for some form of compensation within the community (Schacter and Marques 2000). Internal mechanisms within the community could push the innovators to acknowledge their responsibility in resolving an emerging conflict. In Bat Trang, where pollution was recognized to be a problem, the small-scale producers included environmental considerations in their assessment about whether or not to invest in LPG-fired kilns.

Quotes: Acknowledging responsibility.

“During the time of the charcoal kiln, I felt the effects of the bad air quality on my health.” - Early innovator, Bat Trang (May 2010)

“We feel sorry for the poor households but there is nothing we can do. It is not our responsibility. We produce products in a free competitive market.” - Export company manager, Phu Vinh (May 2010)

“I have worked for several bosses in export companies in Phu Vinh, and CSR is very new to them, actually they are only focused on profit” - Administrator (and university student) in rattan export company, Phu Vinh (May 2010)

“Addressing pollution is the responsibility of the government and not of the starch producers.” - Retired man in the pagoda, Duong Lieu (May 2010)

“The dye workshops are causing the pollution. I do not know what I can do. I am concerned because eventually the clients will not want to come anymore to a polluted village.” - Silk shop owner, Van Phuc (May 2010)

On the other hand, the innovators could intentionally not take responsibility, acting opportunistically and selfishly taking advantage of circumstances with little regard for principles or the welfare of others. Such behavior involves misusing the ignorance of others by seeking self-interest with guile (Williamson 1986). This situation can often escalate into a conflict. In the rattan case, the export companies lowered the price they offered and opted for opportunistic behavior, following the principles of the free market game.

Altruism and opportunism are discussed within the context of morality. Frederiksen (2010) distinguishes several moral frameworks upon which CSR policies are based. These include moral egoists, libertarians (who believe in not violating anyone else’s rights), utilitarians (who promote the best possible outcome), and supporters of common-sense morality. Most CSR and stakeholder literature contains the assumption of the societal interest of the entrepreneur as an individual or organization that is willing to accept responsibility and to redistribute benefits and

important decision-making power to stakeholders (Stieb 2009). These strands of CSR and stakeholder literature assume a variety of motives among dominant actors, once responsibility for outcomes is acknowledged.

While there are well-intentioned innovators who are willing to compensate others for harm caused, the scale and complexity of the problems, uncertain causality and bounded rationality may all make it difficult to know how to do so. Even if the causes are known it may still be difficult to establish the appropriate level or method of compensation. When there is proximity between the actors, as in the clusters in Vietnam, it should be easier for the innovators to arrive at acceptable compensation arrangements for the community.

Enforced responsibility

In cases where there is no internal settlement of the conflict or voluntary compensation and the escalating conflict remains unsolved, innovators could be pushed by an external force or a new institutional arrangement to acknowledge responsibility and realize some form of resolution. In the silk village, the local administration sees its responsibility as addressing the pollution problem. If this does not happen the community is likely to end up with an unresolved and escalating conflict, as witnessed in the rattan case.

Quotes: The role of third parties.

“The local administration hires staff to clean up, but they do that only once a month. This is not enough.” - Household producer of starch, Duong Lieu (May 2010)

“We want to move the starch production out of the village to the mountainous areas where the cassava is grown.” - People’s Committee administrator, Duong Lieu (November 2009)

“We see the pollution as a problem that the local administration has to solve. We have plans to move the polluting dye workshops to an area outside the village where we will install a water purification plant. However we do not yet have the financial means to do so.” - People’s Committee administration, Van Phuc (May 2010)

“Based on ideas and discussion with some ceramics producers, the local authorities organized a conference on LPG technology, with support from GTZ. After the conference small entrepreneurs started to experiment with the technology.” - People’s Committee administrator, Bat Trang (May 2010)

A third party, for example a court of law, can also be called in to intervene and to act as an arbiter. However, in many developing countries there is limited awareness of, or access to, *de jure* rights and poor people are often excluded from the formal legal system (Barendrecht 2009). There are no or few formalized processes for local actors to claim their rights as a result of failing laws, judiciaries and other legal mechanisms (Buscaglia and Ratliff 2000). An alternative is that

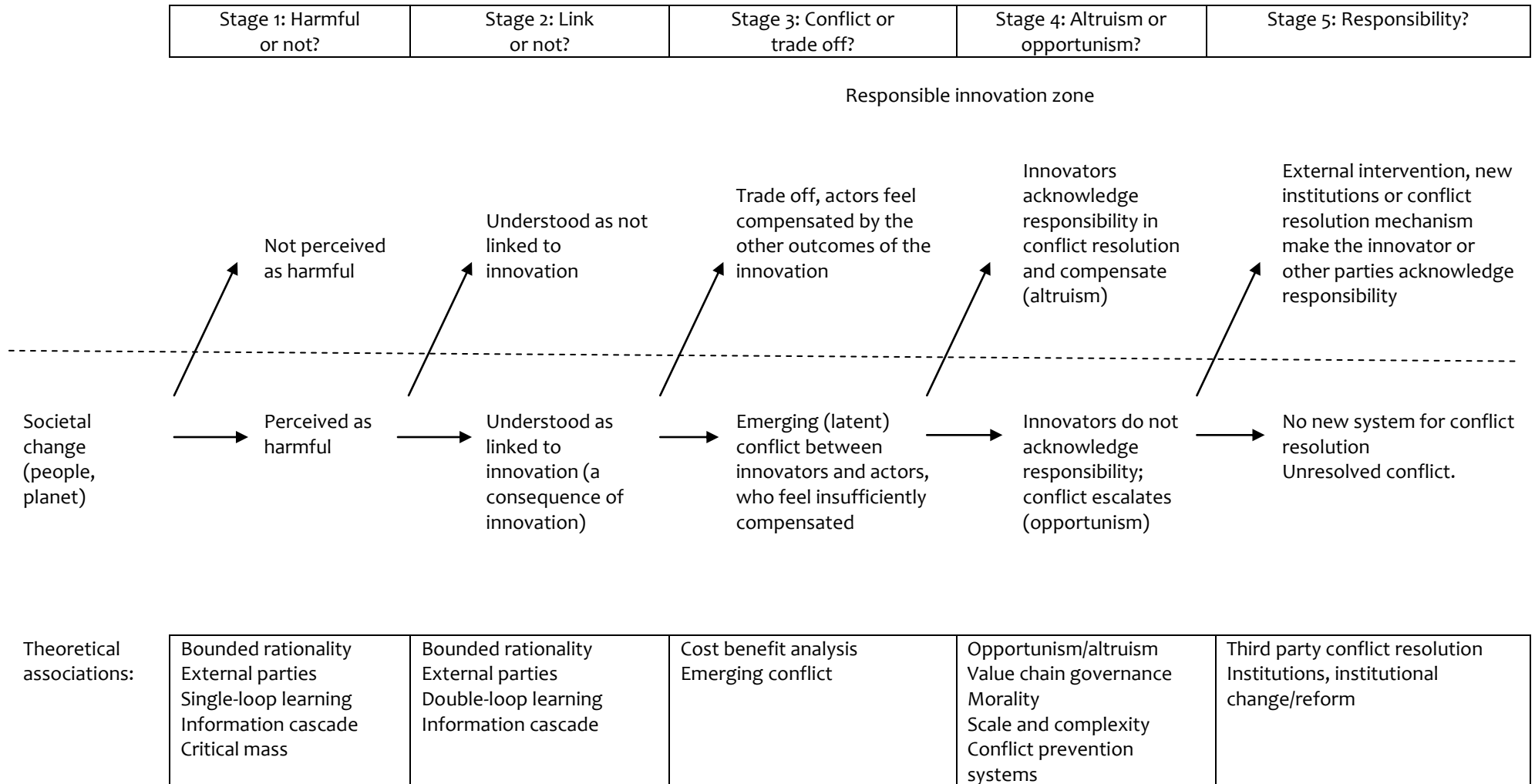
resolutions might be arrived at through informal and multi-actor conflict resolution arrangements (Crowfoot and Wondolleck 1990).

A final difficulty here is that disadvantaged parties may lack the courage to fight a claim and therefore assume a position of powerlessness. This partly depends on the cultural patterns within the community. For example intimidation might play a key role in some countries. In the case of Vietnam, social mores about harmony, not complaining and accepting one's destiny are likely to be more decisive (Warner 2003). Some societies stress tolerance and are less inclined to engage in behavior that is seen as creating conflict.

The societal process towards responsible innovation

Based on the empirical material gathered in our case studies and theoretical insights drawn from literature we advance a conceptualization of responsible innovation, which it views as a five-stage model (Figure 4.1) of a societal process, depicted below. The process either ends in an unresolved conflict or moves into the zone of what can be termed responsible innovation; innovation that takes account of social, environmental or distributive issues and is acceptable for the community concerned.

Figure 4.1: The societal process towards acknowledging responsibility.



4.4 Concluding remarks

We have considered the applicability of CSR theory and stakeholder perspectives in innovative small producers' clusters northern Vietnam. Our intent has been to develop a view of what constitutes responsible innovation in the context of a developing economy. Our conclusion is that there are limits to the extent to which projectified CSR practices can explain what happens on the ground in such a context.

We found that small producers in the cases in Vietnam do not consciously design procedures to anticipate or avoid environmental and social impacts. They work in a context that is characterized by risk, uncertainty, bounded rationality and a weak formal institutional setting which implies high costs associated with information. Yet the innovation activities and societal consequences take place in the community in a direct and visible way. Unforeseen outcomes of innovations emerge and manifest themselves in the villages. Adaptive and informal institutional mechanisms may or may not enable the actors involved to react to these changes, whether through compensation or conflict. Experience and learning are critical in mediating and resolving the emerging conflicts. These can result in compensation or adaptations to the initial innovation. The assessment of societal impacts and the conflict resolution mechanisms do not involve external normative frameworks; rather people in the community decide what is important for, and fair to, them. However, the involvement of third parties seems essential for sharing information about the impacts, sorting out the understanding of complex situations and causality and in the mediation of conflicts. Although the processes do not follow the principles of the stakeholder approach or CSR practices, they do resemble the early origins of CSR which recognize the relationship between people and between people and resources.

An essential feature in this emergent and experiential learning-based mechanism is the quality of the process of human interaction. Quality concerns the community's ability to adapt and resolve conflicts so that they can enter the *responsible innovation zone*. Ideally, this involves an open and transparent discourse in which powerful actors do not seek to dominate the process to benefit their own interests. The actors affected by the innovation outcomes have a voice and are able to speak, which characterizes the deliberative and empowering capacity of a broad base of community members to achieve process justice and fairness. The quality of the process of human interaction is embedded and shaped in a specific institutional context. In sum, table 4.2 lists the key differences we identified between the CSR and stakeholder engagement approaches and the societal process model as analyzed and conceptualized in this chapter.

Table 4.2: Key differences between CSR/stakeholder engagement and the societal process model.

Projectified CSR/stakeholder approach	Societal process model
Planned project and foresight-based	Emergent and experience based
Quality of the analysis	Quality of the process
Expert system	Perceptions of community members
Predefined steps and procedures	Open process
One central actor	Multi-actor and social learning
Compliance with a project framework that may include external values and norms	Community fairness
Dominance of the central actor	Empowerment of actors
Absolute outcomes	Compensation of outcomes

The factors that steer the societal model can be seen as embedded in a variety of theoretical associations, including bounded rationality, emergent learning, third parties and formal and informal institutions. The societal model proposed in this chapter does not explain the institutional context for a community to move towards a responsible innovation zone. It would be informative to explore why one case ended up in the zone of responsible innovation while others remained as unresolved conflicts. Further research could explore hypotheses regarding the role of institutional factors and the extent to which the nature of the innovation and the scale and complexity of the problems play a role. We believe that these Vietnamese case studies and our proposed grounded view of responsible innovation represent the reality facing many small producers and communities in developing countries.

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Chapter 5

UNDERSTANDING RESPONSIBLE INNOVATION IN SMALL PRODUCERS' CLUSTERS IN VIETNAM THROUGH ACTOR NETWORK THEORY (ANT)

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5.1 Introduction

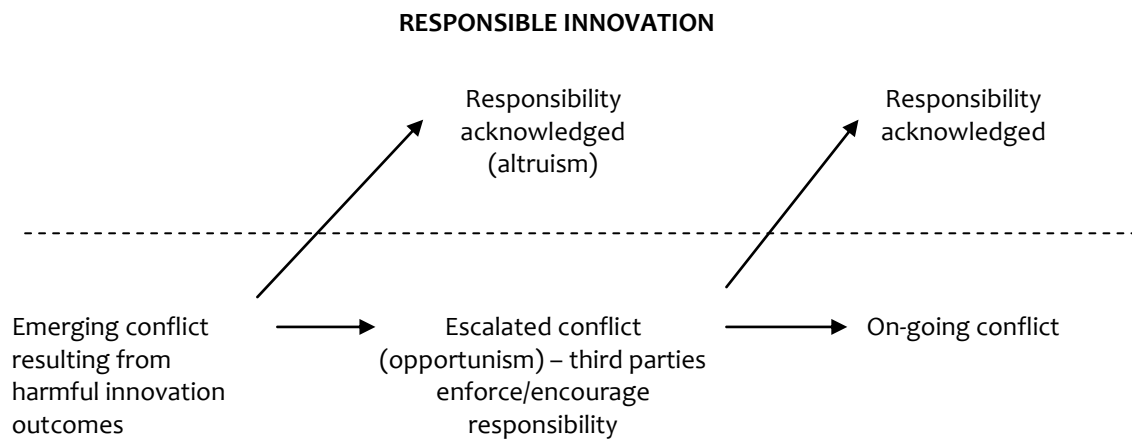
Earlier chapters have described the new economic dynamics that are emerging within clusters of small producers in rural northern Vietnam. Household-based producers in various traditional craft villages have introduced new technologies, products, input materials and business practices. These have improved their competitive position and contributed to the economic development of these communities. We linked this to innovation, defined as the introduction of newness that creates value (Nelson and Winter 1977, Drucker 1985, Kline and Rosenberg 1986, Tether 2003, Voeten et al. 2011). Economic and management theory stresses the link between innovation and increased competitiveness, value creation and economic development. However, these theories tend to have a very strong focus on advanced technologies in formalized western economies with relatively strong institutional networks. It is increasingly acknowledged that innovation can also play an essential role in promoting competitive economies and growth in developing countries, and can have an impact on poverty alleviation (Gellynck et al. 2011, Wolf 2007). There is growing evidence of innovation taking place in poor contexts within developing countries (Humphrey and Schmitz 2000, Henderson 2002, Schmitz 2004, Aubert 2005).

The examples of innovation that we described in Vietnam not only created economic benefits, but the affected communities also experienced a range of additional environmental and social consequences, including negative ones such as pollution, an uneven distribution of value created, a worsening of labor conditions and an emerging gap between rich and poor. Such changes are relevant from the perspectives of poverty alleviation and sustainable development. These perspectives require us to shift our gaze beyond a narrow economic focus on value creation and income and to look at the broader environmental and social consequences of innovation. This

should involve a shift in perspective since there is explicit recognition that poverty is a complex multidimensional phenomenon (London 2007), including the lack of basic human needs, such as food, safe drinking water, sanitation facilities, health, shelter, education and information (United Nations 1995, Sen 1999, World Bank 2000). When discussing innovation as a route towards poverty alleviation and sustainable economic development, such factors should also be taken into consideration.

Interestingly, in some of the Vietnamese examples, the innovators - through their interactions with other community stakeholders - came to recognize and acknowledge responsibility for these environmental and social considerations. In our explorations of the broader positive and negative social consequences of innovation and the responses of the innovators, we conceptualized *responsible innovation*; a societal process that can be described in a five stage model (Voeten et al. 2012). The underlying idea of the model is that innovators acknowledge responsibility in the resolution of societal conflicts resulting from harmful innovation outcomes. We found that the acknowledgement of responsibility was not a predefined strategy based on the precautionary principle (United Nations 1992), or a project-based position derived from CSR (Frederick 1960, Donaldson and Preston 1995). Rather it emerged from a dynamic interaction within the community where people live and work closely together. This model, presented in the previous chapter, describes a societal process shaped by human interactions, power relations, learning, and the material and non-material outcomes of innovation. If a community accepts the harmful material outcomes as a trade-off then it enters into what we term the 'responsible innovation zone'. If not, the model suggests that a (latent) conflict will emerge between innovators and actors who feel insufficiently compensated. Innovators can acknowledge their responsibility through a process of conflict resolution and provide compensation (altruism) or, they can deny responsibility and conflict may escalate (opportunism). A further possible stage can involve third party intervention or conflict resolution mechanisms that either enforce or encourage the innovator(s) to acknowledge responsibility. Without such outside intervention the conflict is likely to continue and escalate (figure 5.1).

Figure 5.1: Acknowledging responsibility in the societal process model.



(Source: Voeten et al. 2012)

Since innovation (and particularly responsible innovation) offers opportunities for poverty alleviation it is interesting to understand the dynamics of the societal process involved in more detail. In an ideal situation, an innovative small producers' cluster creates value and moves into the responsible innovation zone by acknowledging responsibility for any (unforeseen) social and environmental consequences of the innovation. Responsible innovation, in our understanding is a societal process that combines innovation (and its economic benefits), sustainability and poverty alleviation. There is an abundance of literature, from very different positions, that describe these processes and their inter-relations. Yet, there is relatively little scientific work that integrates the theoretical elements that relate to 'responsible innovation'. The most prominent approaches on small business and poverty alleviation include appropriate and intermediate technology (Schumacher 1973), technology transfer (Mansfield 1975), micro-credit (Khandker 1998, Chavan and Ramakumar 2002), business development services (Dawson 1997) and the bottom of the pyramid concept (Prahalad 2004, Hart 2007, Arora and Romijn 2009). However, this literature does not explicitly address innovation and dynamics in the context of developing countries or address the issue of why innovators acknowledge responsibility (or not). This gap led us to our research question: how do small producers, as innovators working in a cluster, innovate and take broader societal considerations into account in the innovation process?

In section 2 of this chapter we review a range of existing conceptual insights, elements and associations relevant to the, multi-faceted, issues of innovation dynamics and responsibility in developing countries and their shortcomings in relation to the research question we posed. This

leads us (in section 3) to propose Actor Network Theory (ANT) as a suitable methodological lens for the empirical part of the research. In section 4 we describe two contrasting cases from Vietnam; one small producers' cluster where responsible innovation occurred and one where it did not. In section 5 we carry out a comparative analysis and review our observations against theory. We conclude by returning to and adapting our 5-stage model to reflect our new understanding of the dynamics, factors, and conditions that influence the societal process towards responsible innovation, as well as posing some new research questions.

5.2 Theoretical explorations

Since responsible innovation is a multifaceted concept (see chapter 3), the theoretical explorations into underlying dynamics open up a wide array of leads and pointers in theoretical fields. Authors have written extensively about the stages and the flow of the innovation process (Dosi 1988, Tether 2003) and the diffusion of innovation (Rogers 1962). Initially, innovation was viewed as a one-dimensional 'linear process' that occurs at the level of the firm: proceeding sequentially from research through development to marketing. The evolutionary economic perspective, advanced by Nelson and Winter (1982) proposes a non-linear, open systems model of innovation. This was further developed in the chain link model of Kline and Rosenberg (1986) which stressed the importance of feedback loops between research, technological knowledge and the market. In the early 1980s (Lundvall 1992, Freeman 1995) advanced the theory of a National Innovation System (NIS). This theory suggests that the process of innovation is characterized by interactive learning within an innovation system: a spatial concentration of firms and associated non-market institutions such as universities, research institutes and relevant government agencies. NIS views innovation as extending beyond the development of new products and processes. It focuses on interactive learning and emphasizes human interactions and inter-dependence and the central role of institutions (Edquist 1997). Although institutions play a vital role in creating trust and supporting risk taking and investment in innovation (North 1990, Kasper and Streit 1998), these institutional theories do not describe or explain the actual processes that shape human interactions and the how these processes influence the emergence (or not) of socially responsible innovation.

Institutional theory, assumes that formal institutions, such as universities, research centers, educational and government development and promotional agencies fulfill the key functions in providing information, stability and predictability (Freeman 1995, Edquist 1997). Our earlier explorations of the Vietnamese clusters of small producers showed an absence of such formal

institutions to facilitate the innovation process (Nguyen and Voeten, 2012). For these small producers informal institutions - family ties, solidarity and contacts - were much more important. In this context, the literature on formal innovation systems in Western economies is less relevant to understanding innovation. Recently some attempts have been made to describe the informal institutions in innovation in developing countries (Aubert 2005, Humphrey and Schmitz 2000, Henderson 2002, Schmitz 2004). Lundvall et al. (2009) applied innovation system analysis to economic development in developing countries and this led them to acknowledge that, in such contexts, the narrow 'formal institution-focused' understanding of the innovation system is of limited value for understanding and explaining innovation. He suggested that an approach based on doing, using and interacting involving learning, human interactions, tacit and localized knowledge is more useful for building a broader understanding of innovation systems in developing countries. Informal institutions will be a critical part of such an analysis.

This reflects a gradually growing recognition of the importance of informal institutional mechanisms. However, this understanding has yet still to be applied to the process of innovation. Informal institutions are described extensively in sociology particularly their role in structuring human interactions in non-western settings, through the use of concepts such as social capital, social contracts and interactions in communities, governance and power relations (Portes 1998, Stiglitz 2001, Chopra 2002). Informal institutions are generally thought of as being highly dynamic, constantly subject to redefinition, reshaping and renegotiation. This makes them difficult to describe. Putnam (2000) discusses the decline of social capital and informal institutions in the American context and the loss of connections with family, friends, neighbors and informal structures. These strands of literature do not address how informal institutions relate to economic competitiveness and innovation or how facilitate or hamper the acknowledgment of responsibility - but they do provide a platform for starting to ask such questions.

Another issue missing from institutional theory is the role of materiality, which we found essential in shaping societal processes in Vietnam. Material outcomes (of innovation) resulted in new forms of cooperation and interaction that helped steer the dynamics of societal processes. This materiality is not included in institutional theory. This reflects an epistemological contradiction that emerges when trying to understand or describe the societal process of responsible innovation as discussed in the preceding chapter. Analyzing human interactions and institutions from a sociological perspective involves adopting a constructivist, post-modernism approach which considers institutions to be mental constructs. If one acknowledges the role of materiality in the process this involves adopting a positivist approach, which is premised on the

existence of a single material reality and of one objectifiable truth (Devitt 1997, Kirkpatrick et al. 1978).

As is often the case in analyzing and understanding a multi-faceted societal phenomenon, such as responsible innovation, the many institutional, interacting and material issues cannot be addressed in isolation. They are *meta-textual issues*: sets of interconnected issues (Roome 2001) that involve a range of actors. One issue in the set is likely to impact on other aspects of the set. In consequence, responses to meta-problems do not lend themselves to action by any one actor but need to emerge from interactions between actors. One example of this is the importance of inter- and intra-organizational links and networks that underpin corporate environmental management in the Western corporate sector (Roome 1994, Clarke and Roome 1995). Companies wishing to address environmental issues and sustainable development have found it beneficial to participate in collaborative actions that link their traditional business issues to a set of (unfamiliar) environmental management and sustainable development issues. Processes of this kind need to involve multiple parties whose discussions and interactions will lead to the emergence of concrete goals and instruments for, say, pursuing sustainable development (Kleef and Roome 2007). Against this (western) background, Clarke and Roome (1995) have written about *learning-action networks*: sets of relationships that span business organizations and other stakeholders in society, which overlay and complement formal organizational structures. The networks link together individuals in these organizations through a flow of knowledge, information and ideas. It is generally considered that these relationships make the members of these networks more receptive to acknowledging responsibility about environmental and social issues.

There is a wide body of literature that discusses Corporate Social Responsibility (CSR) (Bowen 1953, Frederick 1960), sustainable development (Brundtland 1987, Elkington 1999, Hart 2007), the precautionary principle and the stakeholder approach (Freeman 1984). In both theory and practice these concepts are very much Western-based and projectified ideas, rooted in the context of formal economies and adopting predefined steps and procedures that are derived from expert systems. CSR assumes *a priori* that business managers and innovators are altruistic, responsible and have good intentions. Critics of CSR consider this to be a naive assumption (Stieb 2009). This debate notwithstanding, CSR is not a useful analytical framework for understanding responsibility-taking among the Vietnamese clusters because (as argued in the previous chapter) the process of innovation in Vietnam is not project-driven. The societal process of responsible innovation is an emerging, multi-actor and experience-based process characterized by dynamic, spontaneous interactions and social learning (Voeten et al. 2012).

The learning-action network seems to have relevance to the model we developed for understanding socially responsible innovation in Vietnamese clusters. The learning dimension, in particular (either individually or through a network) is a key element in the dynamics of innovation (Dosi and Nelson 1994, Mytelka and Smith 2001). Learning has been widely studied and described, with ranging from efficient learning - single loop, exploitative - to effective learning - double loop, explorative (Argyris and Schön 1978). There is also an extensive literature on learning organizations (Senge 1990) and learning regions (Rutten and Boekema 2007). Experiential learning, the process of making meaning “through the transformation of direct experience”, is particularly relevant in more informal settings (Kolb 1984). The same is true of social learning, through which, actors can jointly begin to see different aspects of a problem, constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible (Beers et al. 2010, Pahl-Wostl 2006). The *community of practice* literature is also relevant for exploring the Vietnamese clusters. A community of practice is defined as “a group whose members regularly engage in sharing and learning, based on their common interests” (Lesser and Storck 2001). Mierlo et al. (2010) provide a list of preconditions for social learning, which includes trust in the social environment, belief in one’s own capacities, assessment of risks and acknowledgement of one’s own role and responsibility.

The learning-action network theory also seems applicable for the Vietnamese clusters since it explicitly recognizes the network dimensions. Network theory has become the focus of much research attention in recent times (Granovetter 1973, Milgram 1967, Watts and Strogatz 1998, Barabási 2003). Networks are seen as essential mechanisms for the development of knowledge and learning which, in turn, lead to innovation and adaptation (Cartwright and Harary 1956). Modern network theory has been applied in many different domains and several of the viewpoints that have been explored are relevant to the process of responsible societal innovation. Networks create social capital for individuals (Bourdieu 1985) and communities (Putnam 2000). They are the defining feature of *innovative* and *learning regions* (Rutten and Boekema 2007) create trust and increase forbearance (Sabel 1992, Uzzi 1997) and provide economies of scale (see the cluster literature e.g. Humphrey and Schmitz 1996, Nadvi 1997). As a research tool, network theory has been used effectively for cross-disciplinary study. It brings order to an apparently disordered world, reducing complex problems to a series of relationships that can be mapped diagrammatically. There are some critiques of these approaches, particularly about nodal networks, which are presented as rigid and inflexible structures and tend not to answer questions about the dynamics involved and how human interactions actually evolve and materialize.

These theoretical explorations provide a fragmented picture of some of the elements, concepts and notions that may assist us in our conceptualization of responsible innovation. However, no single theory provides a comprehensive analytical framework that captures the dynamics of the societal process and the human interactions described in our five-stage model of responsible innovation. In sum, we consider that the theories we have reviewed are ill suited to our research subject for four main reasons:

- Institutional theories do not analyze how human interactions are actually shaped, nor do they explain why some institutional settings create a context for opportunistic behavior, while others result in innovators acknowledging responsibility. Human interactions that occur within such a complicated meta-textual problem set are extremely difficult to conceptualize, visualize and analyze (Roome 2001).
- These theories are largely based on Western economies and assume the existence (and importance) of formal institutions working within relatively stable institutional frameworks. The role(s) that dynamic informal institutions play in innovation systems and networks in developing countries has not yet been sufficiently explored.
- Although there is abundant theory about networks, it often only provides limited insights into the actual formation and evolution of networks and how people interact within these networks.
- These analytical frameworks generally do not pay enough attention to how materiality influences and can explain the behavior of innovators, the development of networks, the dynamics of clusters and the acknowledgement of responsibilities.

5.3 Methodological approach: Actor-Network Theory and innovation

Actor-Network Theory (ANT) offers an alternative methodology to address the research challenges summarized above. The ANT lens is particularly useful for describing how networks emerge and how interactions among the actors involved in innovation take shape; it is not a static description of nodes and hubs. Actually, ANT is not a theory; rather it is descriptive and explanatory (Law 2007). Latour (1987) and Cordella (2006) argue that innovation has to be studied in action, focusing on the dynamics rather than on the stability of the relationships.

ANT assigns agency to both human and non-human actors, e.g. the material outcomes of innovations (Callon 1986, Law 1992, Latour 2005). This makes it particularly relevant for our research. ANT sees innovation as the result of a dynamic formation of alliances in which material things also play a role. ANT assigns agency to non-human actors and regards technology and

society as fundamentally equal entities which should be treated as such; for this reason human actors and material entities are jointly referred to as *actants* in ANT jargon (Latour 1987, Law and Hassard 1999). The ANT perspective considers the interactions between network actors and actants as a whole. Networks are actually based on, and framed by, non-human objects, material innovations, observations, technology and scientific evidence along with the subjective perceptions and opinions of the community members, their attitudes, mental models, cultural patterns and the informal institutions (semiotic context). From a methodological point of view it is interesting to note that materiality - an epistemologically positivist concept (Devitt 1997) - combines with human interaction through constructivist-based perceptions, negotiations, assigning roles and identities and eventually acknowledging responsibility.

ANT uses the term *black-boxing* (Law 1992) to describe the formation of a network and how the alliances and interactions between actors are established. A *black box* is created when all the underlying human and non-human interactions are clarified and there is a shared common understanding of the identity and role of each actant. This point is arrived at via the *Obligatory Passage Point* (OPP) - the focal actors' group that claims the central position in coordinating this process. The enrolled human actants feel represented by the network and agree with the terms of cooperation. For successful innovation in a cluster, all the actors within the cluster need to join in with the innovation effort and agree on how to collaborate. A smoothly running cluster (a black-box) is a prerequisite for successful innovation in the strict economic sense.

ANT sees this black boxing process being achieved through the *translation moments*. The ANT methodology focuses on describing how actors enroll to the network, agreeing that it is worth building and defending (the sociology of translation). A translation moment refers to the process of configuring the actor-network (Law 1992) when both human and non-human allies are enrolled within it. This implies a series of negotiations to (re)define the network, in which one set of actors seeks to impose their definitions of the situation on others (Callon 1986). Successful networks of aligned interests are created through enrolling actors and translating their interests so that they are willing to participate in shared ways of thinking and acting.

Callon (1986) has defined 4 moments of translation, which provide a possibly interesting avenue to explore the societal process towards acknowledging responsibility for the unanticipated consequences of innovation. The first moment is *problematization* during which a focal actor defines the identities and interests of other actors that are consistent with its own interests, and establishes itself as an OPP, making itself indispensable. *Interessement* is the second moment of translation: this involves a process of convincing other actors to accept the definitions and

identities of the human and non-human actants and is the point when they become aligned, or locked into place. The third moment, *enrolment*, is a set of strategies in which the initiators seek to allocate terms and conditions to other actors. This can be done through informal and formal agreements. The *mobilization of allies* is the final moment of translation, where all the actants are aligned and have their interests represented in the network. A crucial aspect of this moment of translation is ensuring that the OPP acts as spokesperson properly representing the network.

We are going to apply these four translation moments to our empirical work, to structure our description of the innovation process and the creation of two actor networks (the Vietnamese small producers' clusters), one that we had assessed as representing responsible innovation and another that we did not.

5.4 Cases

Through information-oriented sampling, we selected two craft villages in northern Vietnam that we knew well from our past research work. The selected cases - Bat Trang ceramics village and Van Phuc silk village - have several characteristics in common. They are both craft villages, organized as small producers' clusters where the producers themselves have introduced innovations. Both villages are situated close to the nation's capital, Hanoi, have a similar demographic composition, work force, levels of accessibility and face similar policy and governance contexts. The innovations in both villages led to different environmental and social outcomes, which were differently perceived and addressed. We previously identified Bat Trang as being in the responsible innovation zone, while Van Phuc was not.

We carried out two field work visits of two weeks each in May 2010 and February 2011. In each village, the team collected a broad array of quantitative and qualitative case study material through observations and open, in-depth interviews with 20 - 30 households per village, local officials, clients and other informed people in the villages. We also did a few interviews in Hanoi with Vietnamese research institutes, NGOs and government agencies. The data collection was an iterative exercise, involving observations and interviews in the field, transcribing, discussing and interpreting the recordings and then further refining, coding and analyzing the data before the subsequent round of data collection (flowing the tenets of grounded theory). We aimed to capture the dynamics, the changing informal context and the human and non-human actants. We focused on the innovation process and societal process towards responsible innovation and how the relationships among the actors developed. To provide insight into the trail of evidence, key quotes from the interviewees are listed in annex C to this chapter.

Bat Trang

Bat Trang is a traditional craft village in the Red River Delta in northern Vietnam, close to Hanoi. For centuries, the villagers have produced porcelain and pottery items, such as vases, bowls, dishes and cups for daily household use. From the 1960s to the 1980s the socialist government regrouped the small producers into a collectivized structure. The Bat Trang village administration played a directive role in planning the pottery production of the individual households producing ceramics, and was the sales link to state-owned retail shops. Ceramics production was not a very attractive venture in those days, although as an old craft it did provide a stable, albeit low, income for the households involved. Poverty was common in the village and charcoal fired kilns resulted in increasingly serious environmental problems, a blackened and dirty village and polluted air.

In the 1990s, the political context changed in Vietnam and the government introduced a free market economy. The country opened up to the world and liberalized its policy for establishing contacts abroad and exporting. New legislation allowed individuals to establish private enterprises and to conclude direct export contracts without any state involvement. This provided the small producers with new opportunities (in terms of production and marketing) although they still faced serious problems. Their low-quality ceramics were not competitive at that time, the village had become one of the most polluted places in the Red River Delta and respiratory diseases were common.

Several entrepreneurs began to explore new ceramics baking technologies, such as firing the kilns with Liquefied Petrol Gas (LPG), which improved the production process and reduced the smoke emissions. After some first initial contacts and discussions between this small group of early innovators, the village administration and the German development agency GTZ a workshop was organized in 1993 to discuss the introduction of the LPG technology more in detail. The villagers showed great interest in the new technology (which was also cleaner) and local government officials and GTZ decided to continue to support the idea. Shortly thereafter, the small group of entrepreneurs purchased a trial LPG kiln from China and started to experiment with it. It quickly became apparent that they could produce high-quality and thinner ceramics opening the door for increased competitiveness and export opportunities.

After the first operational success of the early innovators, a larger group of entrepreneurs in the village enthusiastically started to follow the idea and commercialized it further, not only because of quality of the products but also because of the less harmful smoke emissions. GTZ and the

government played a role and organized a new project enabling the small producers to obtain credit and technical assistance to install LPG technology. In the 1990s and early 2000s, two thirds of all the small producers in the village switched from charcoal to LPG kilns. The introduction of the new technology ran smoothly. The early innovators were willing to help - for a small fee - other producers to get the technology working.

Bat Trang expanded in terms of its economic outreach. More visitors came to the village to buy ceramics. The small producers started to export and their production and marketing system changed. The small producers also established ceramics shops in the village and started to conclude contracts themselves. This involved establishing and stabilizing relations with new types of client, including wholesale buyers, and large scale buyers such as hotels, transporters and export companies. These new trading relations were very much in line with the old traditions and customs in the villages. Joint deals were also made with tourist companies in Hanoi to include Bat Trang ceramics craft village in their tour packages. More and more actors became involved in the success of Bat Trang. The ceramics producers concluded new contracts with clay suppliers from other provinces, since the LPG technology required finer clay. Several kiln construction and maintenance companies started to establish themselves in the village. Many villagers were happy to see that, despite the new developments, the village's traditional norms and values and the solidarity among people did not change.

In the past, the household enterprises mostly used family labor. However, during the economic expansion, a shortage of laborers became apparent. Small producers had to recruit workers from outside the village, although they were reluctant to do so. They had production secrets - the glazing technique for instance - that they did not want to share with outsiders. New employment contracts and salaries had to be sorted out and negotiated. There were some households that did not want to take the risks involved with such expansion, but they easily found employment at other household businesses.

For the small producers, the LPG kiln was a success story for two reasons, improved competitiveness (thus higher incomes and less poverty) and cleaner air in the village. In fact, the environmental situation of the village very much improved. The villagers had a feeling of pride, satisfaction and control. There is solidarity among the small producers, they often share large orders, but there is also some 'healthy' competition.

The Ceramics Association played an important role in all this. Originally, it was set up with a small office in the middle of the village to facilitate the introduction of LPG kilns. These days most of

the ceramics producers are members, they feel the organization represents their interests and see the advantages of membership. The Ceramics Association organizes technical information events and provides a platform to exchange information on technical issues, marketing and exports, social and environmental issues and investing in clean technology. The small producers discuss issues among themselves and advise each other about technology, export details, price setting etc. The government is supportive and has invested in infrastructure in the village, a market place and new roads and has established a bus connection.

The small producers in Bat Trang have not specialized in particular production steps, but have kept all the steps, modeling and shaping, baking, painting and glazing, in a vertically integrated production chain under each household's roof. Business has developed quite well, although other villages in Vietnam, and particularly in the surrounding area, are becoming more involved in ceramics, posing a competitive threat. The producers in the village have not fully responded to this threat; there is no new significant innovation (in terms of technology or production) although there have been some design updates. Despite the high cost of the kilns, they are not used to their full potential because of a lack of functional specialization within the production chain. This means one of their main production assets, the LPG kilns, are underutilized, a fact which may eventually undermine their competitive position and result in stagnation in the future.

Van Phuc

Van Phuc is a traditional silk craft village where households used to breed silkworms (the village was surrounded by mulberry trees), prepare silk thread, weave it manually on wooden looms, dye it with natural colors and tailor it. The villages produced a range of silk fabrics and tailored silk items, including shirts, ties, scarves and traditional and modern dresses. In the 1970s and 1980s, the communist government collectivized many branches of production in Vietnam, including silk production in Van Phuc. The village administration established a silk cooperative and hired laborers from the village for the various steps in the production process. State-owned department stores in Hanoi sold the silk products and the cooperative exported to friendly socialist nations such as the Soviet Union and the Eastern Bloc countries. At that time, the cooperative was the centre of the village economy, providing a small but stable income to many. Despite the poverty, older people still recall there was a sense of solidarity.

In the times of the economic reforms, the government introduced the free market economy in the 1986 and privatized and dismantled state owned enterprises, including the silk cooperative in Van Phuc. Moreover, the Vietnamese government implemented a complete set of new legislation

aiming at promoting the private sector. A special enterprises law was adopted - providing a legal framework for small business - allowing and facilitating entrepreneurs to set up own business. These political, economic and institutional changes brought opportunities and economic freedom to Van Phuc, as well as uncertainty. Silk workers lost their fixed employment at the cooperative and began to explore new ways to produce and sell silk. They re-established workshops in their homes, took equipment and tools from the collective and specialized in the different production steps: weaving, dyeing, tailoring and sales and trading. One major change was the opening of silk shops along the main street of the village.

Ms. Hong. was one of the first to open a shop, in 1987. She used to work as shop assistant in a state-owned shop and had some experience in commerce. Step by step she modified her house into a silk shop. She recalls that in the beginning it was quite difficult because she had to sort out and negotiate a lot of things: finding clients, getting sufficient high quality products for her shop and settling formal regulations with the government. New agreements about the price, quality, and delivery time etc., had to be concluded with the suppliers. The negotiations often proved to be difficult and time-consuming. Eventually, her business became quite successful and many more producers followed her example and started to open silk shops. They took initiatives in terms of establishing contacts with suppliers, clients, marketing agencies, paperwork for export, local authorities for permit issues. Shop owners, whether intentionally playing the dominant role or not, were setting the design, patterns, types of producers, colors as well as the price and standards. The shop owners also changed the standards of quality and the way of selling. They often pretended to sell 100% silk products while in reality they were mixed with artificial nylon. The previous high quality standards for the silk became diluted.

In this new context, the specialized households became the suppliers for the shops. While they benefitted from the success of the shops, it was not to the same extent as the shop owners. Most households did not have experience to sell directly and find markets beyond the village shops. In order to remain in business, they had to conform to the orders and instructions that came from the shop owners. The household based enterprises also faced a shortage of labor and had to engage laborers from outside the village, negotiating employment terms and conditions. The small producers became responsible for their own equipment, including the loom. The village administration did not stand on the side lines, but began a promotional campaign to promote the village as the silk village in Vietnam. There is a silk association, but it only represents a narrow fraction of the silk producers and shop owners in the village.

The shop owners also encountered some opposition and jealousy. Commerce and free market practices were looked down upon by conservative people with communist sympathies. Income disparities emerged. The weavers and dye workshops felt that the shop owners were making most of the money and questioned whether this was fair. Many villagers perceive that the solidarity of times past has gone and people are more selfish.

Despite this, between 2003 and 2008, business was good and poverty in the village declined. Since that time (from about 2009 on), the market has not been so good as before and new competitors (using silk from China) and shops in other villages and in Hanoi are entering the scene. Shop owners complain that Van Phuc is losing its exclusive position. Villagers fear that Van Phuc is becoming more of a commercial centre, selling produce from outside the village. Shop owners increasingly purchase their products from producers elsewhere, even from China. Some people now are stopping with silk production and are even renting their house out as this provides a much better income. The production structure has changed fundamentally in the past 20 years and the village is losing its craftsmanship and its reputation.

Moreover, new and harmful dyeing processes are taking their toll. Over the past 10 years shop owners have increasingly asked for fashionable colors that involved the use of polluting chemical dyes. For a long time the dye workshops have discharged their waste water into the sewage system. The old dyestuffs were not much of a problem but people are starting to get more worried about the effects of the new chemical compounds. New diseases and health problems are emerging. The owners of the dye workshops cannot easily change their practices and have little motivation to do so and the shop owners do not recognize their responsibility. The situation has reached an impasse.

The pollution problem is most visible and bothersome at the outskirts of the village. The shopkeepers are concerned that the pollution may deter their clientele in the future. The local government does feel some responsibility and has developed a plan to move the polluting workshops to a special designated site outside the village and provide purification facilities. However, the realization of this plan is still uncertain. People have an uneasy feeling that the village is falling apart. They are not able to organize themselves as they did in the past, and repeat the earlier success of the silk business. Even the shop owners live outside the village these days.

5.5 Comparative analysis of the cases and theoretical reflection

The case descriptions, structured according to Callon's translation moments (1986), show the creation of innovation actor networks that display elements, patterns and concepts of ANT. The ceramics producers in Bat Trang and the silk shop owners in Van Phuc set and claimed a problematization and successfully established themselves as the OPP. The *interessement* happened when they, as early innovators (Rogers, 1962), implicitly imposed new identities and roles in production and marketing on potential actants. These actants included human actants - community members, producers, suppliers, traders, transporters, customers and workers - as well as material actants - locations, machinery, tools and products. Notions, definitions, understandings and agreements in the villages were sorted out, agreed upon and the actants enrolled in the innovation actor-network. Eventually, the innovation network materialized through the mobilization of allies, and the actants' interactions became *black-boxed*. At first glance, the small producers' clusters in the two cases do not appear to differ much in terms of their economic dynamics and innovations. Yet, the innovative ceramics producers in Bat Trang demonstrated some altruism by taking environmental concerns into account - placing the village in the responsible innovation zone - while the shop owners in Van Phuc did not feel responsible for harmful environmental consequences of their innovations. Their opportunistic attitude led to an emerging societal conflict in the village. The following paragraphs compare the two contrasting cases in order to gain insights and clues into the societal process that led one set of innovators towards acknowledging their responsibility and the others to not do so.

Power relations in actor network process

Viewing the innovation process from the perspective of the four ANT translation moments we can see that they followed different paths after their point of departure and how human interactions eventually led towards the creation of contrasting actor networks.

Bat Trang ceramics village (responsible innovation zone)	Van Phuc silk village (emerging conflict)
<i>Problematization (1)</i>	
The innovative producers included short and long-term societal considerations in the problematization: increasing competitiveness while addressing environmental problems.	The shop owners had a narrow agenda reflecting their immediate short-term interest; the loss of income due to the dissolution of the cooperative.

Interessement (2) and enrolment (3)

The environmental problem was a concern felt by the majority in the village. The subsequent introduction of the cleaner technology by late adapters did not involve much conviction; neither did it imply a fundamental change to the vertically integrated production process, which took place under one household roof. The small producers were free to choose whether or not to join the network (i.e. they were 'pulled into the network').

The marketing innovation implied specialization of different groups of households in the village which involved adopting a new division of labor. The shop owners had the most economic power and became the OPP, imposing roles on the other actants that served their short-term interest. The weavers, tailors and dye workshops did not have a choice other than to join the more heterogeneous network (i.e. they were 'pushed into' the network).

Mobilization of allies (4)

The interests of the ceramics producers were united from the start and eventually institutionalized in the Ceramics Association. The latter became *de facto* the OPP, enjoying broad support among the villagers and acting as 'spokesperson' on behalf of the small producers.

The interests of the network actors were not united in one association. The various network actors do not feel represented by the shop-owners, nor by any other organization.

This ANT analysis shows how the human interactions evolved and shows that there were notable differences in the motives, power position and dominance of the innovators. In Bat Trang, the production system did not change much, so passing through the translation moments was a relatively straight forward process. The human actants supported and voluntarily joined the network and were not obliged to change their existing and homogenous production structure. In the translation moments in Van Phuc the, now more specialized, actor network involved more reorganization. The shop owners - the dominant actors - were in the position to impose a 'forced' process of specialization on the other actants. The power position associated with the OPP seems to have been a decisive factor in the translation moments. Similar discussions can be found in value chain governance theory (Gereffi et al. 2005) and in the literature about network politics, which illuminates the relation between power and agency in network structures (Kahler 2009). When some key actors with influence over the governance of a network exert power and dominance, this can result in more self-interest and opportunism occurring in pursuit of short-term gains. This can lead to broader societal considerations being neglected - a tendency that has been noted in similar discussions about governance (see e.g. Stoker 1998 and Foss 1996). When associations are freely and voluntarily made and the actants feel represented by the OPP, they are likely make the best of it, to reach out and to invest in the future for society - they find it worthwhile to defend the network (Callon 1986) - including acknowledging responsibility for consequences of innovation that could jeopardize the network.

Innovation systems and institutions

There are also differences between the two cases in the extent to which existing informal institutions provided a point of reference and support throughout the network creation process.

Bat Trang ceramics village (responsible innovation zone)	Van Phuc silk village (emerging conflict)
The negotiation of the new terms of the interactions was a relatively simple re-arrangement. There were not many new identities, roles and tasks to sort out and to negotiate in the homogeneous network. Moreover, the villagers often referred to existing traditions and informal rules of the game - how things used to be, and “how we work together around here”. Existing informal institutions created an atmosphere of trust and altruism, providing stability for the new terms of interaction.	The coordination of more specialized structure involved many new interactions and the emergence of different identities, roles and tasks in the value chain. There was no existing institutional framework to guide this process. New terms were set between shop owners and suppliers about delivery conditions, quality and prices. The enrolment process and agreeing on the terms involved more complicated and harder negotiations as there was no existing reference framework.

In Bat Trang there were not many new interactions and contracts to sort out and there were existing informal institutions that functioned as a reference framework. The functions of formal and informal institutions, that set the rules of the game that structure human interaction, are extensively discussed in new institutional theories (Williamson 1986, North 1990). An existing informal institutional framework, referred to by some as social capital (Knight 2003), acts as countervailing power and helps prevent potentially dominant actors from behaving opportunistically. Social capital can enforce innovators to acknowledge their responsibilities by setting a normative environment that provides trust and facilitates cooperation between actors (Coleman 1990, Putnam 2000). If there is no institutional framework to refer to, then a dominant actor group may set and impose new institutional arrangements that serve its interest (North 1990) further enforcing its power base, allow it to behave opportunistically and ignore its responsibilities. In the specialization process in Van Phuc, less reference was made to the existing informal institutional framework, because it was simply not adapted to the new marketing and specialization reality, which could explain why the shop owners, as dominant actors, slipped into opportunistic behavior.

Materiality

The relevance of materiality as an actant in the network and its influence on human interaction becomes evident in the case descriptions, confirming the symmetry of human and non-human

actors within ANT analysis (Latour 1987, Law and Hassard 1999). The comparison of the cases, however, shows that the dominant actors viewed and treated materiality (non-human actants in the network) in different ways and these differences provide an additional insight for understanding responsible innovation.

Bat Trang ceramics village (responsible innovation zone)	Van Phuc silk village (emerging conflict)
<p>Before the new ceramics LPG technology was introduced, there was an existing actor network involving the old charcoal kilns. The LPG kiln constituted the start of a new network and new actants – including pollution – were enrolled around the cleaner technology within the village. The reduction of pollution in Bat Trang resulted in a collective pride among the villagers in the way they live and work together, looking for solutions in solidarity.</p>	<p>The shops - as non-human actants - were enrolled in the network. The introduction of low quality silk and inputs from elsewhere resulted in craftsmanship disappearing from the village, old people muse about the good quality in the past and the differences in the ways people now cooperate and interact. Over time pollution became an emergent ‘inconvenient’ non-human actant, undermining the individual responsibilities, roles and commitment of human actants.</p>

In Bat Trang the materiality brought villagers together while in Van Phuc the opposite occurred. The emerging pollution in Van Phuc is considered as an ‘inconvenient actant’. The shop owners do not allow the pollution to be enrolled in the network. The failure to acknowledge responsibility and to enroll emerging non-human actants risks the disintegration of the actor-network. Actor network theory sees human and non-human actants as fundamentally equal entities with equal agency: they both have a critical impact on how human interactions evolve (Whittle 2008). Responsible innovation allows all actants to be considered equal and allowed to participate in the network. This relates to the different normative frameworks. Aside from making money, the innovators may have other normative frameworks that influence whether or not to allow inconvenient actants to enter the network than for the villagers that are not involved in the craft, yet still live in the village.

Network dynamics

In the course of time, the ‘real world’ (Marsh and Smith 2001) changes, manipulating and creating stresses for an actor network. New human and non-human actants emerge and the network configurations are modified. The cases show two different ways in which the OPP can deal with these dynamics.

**Bat Trang ceramics village
(responsible innovation zone)**

In Bat Trang, all the actants – including most community members, the smoke pollution, the LPG kiln, were allowed and enrolled in the network. All the key actors are located within the geographical boundaries of the village and the situation is relatively stable. There are no critical issues that disturb the village, which remains the centre of the network. The issues that arise are sorted out by the Ceramics Association, within the geographical boundaries of the village.

**Van Phuc silk village
(emerging conflict)**

Water pollution is an emerging non-human actant, which is bothering more and more actants in the network as well as other community members. However, the dominant shop owners do not allow this material actant to enter the network; it is outside of their problematization. Instead, in pursuit of strengthening their competitive position, they look for and buy new and cheaper silk products from suppliers outside the village. Fewer and fewer villagers are enrolled in the silk value chain network.

In Bat Trang, the villagers and ceramics producers jointly learned, identified and agreed about their environmental problem and took responsibility to undertake action for cleaner technology. The problem was resolved within the existing geographical boundary of the network. These dynamic social processes in communities are acknowledged in theories on social learning (Beers et al. 2010), community of practice (Lesser and Storck 2001) and the learning action network concept (Clarke and Roome 1995). Through learning, the network creates social capital for individuals and communities and discourages opportunistic behavior by (potentially) dominant actors. In Van Phuc, the dominant actors were not motivated to learn how to resolve the consequences that occurred within their geographical setting. Rather, they started to look for opportunities to link up with other network actors - suppliers of cheaper input materials - from outside the village. The actor network became less representative and less aligned with geographical boundaries of the village. The network dynamics are evolving away from the village, with actors in the village becoming redundant and being left behind with the harmful outcomes, created in the past.

In sum, the comparison of the two Vietnamese cases seen through an ANT lens provides several clues that can help us to better understand the societal process of responsible innovation. After the introduction of an innovation, socially unwelcome and inconvenient non-human actants emerged alongside the beneficial ones. An actor network can get to the *responsible innovation zone* if the OPP allows these issues to be sorted out among the actants - including the inconvenient material actants - during translation moments within the community. The comparison also shows the dynamism of actor networks; periods of relative stability alternate with new challenges within and around the network. Responsible innovation occurs if the OPP

comes to terms with the new actants and their relationship with the existing actants, the community and the geographical context.

5.6 Concluding remarks

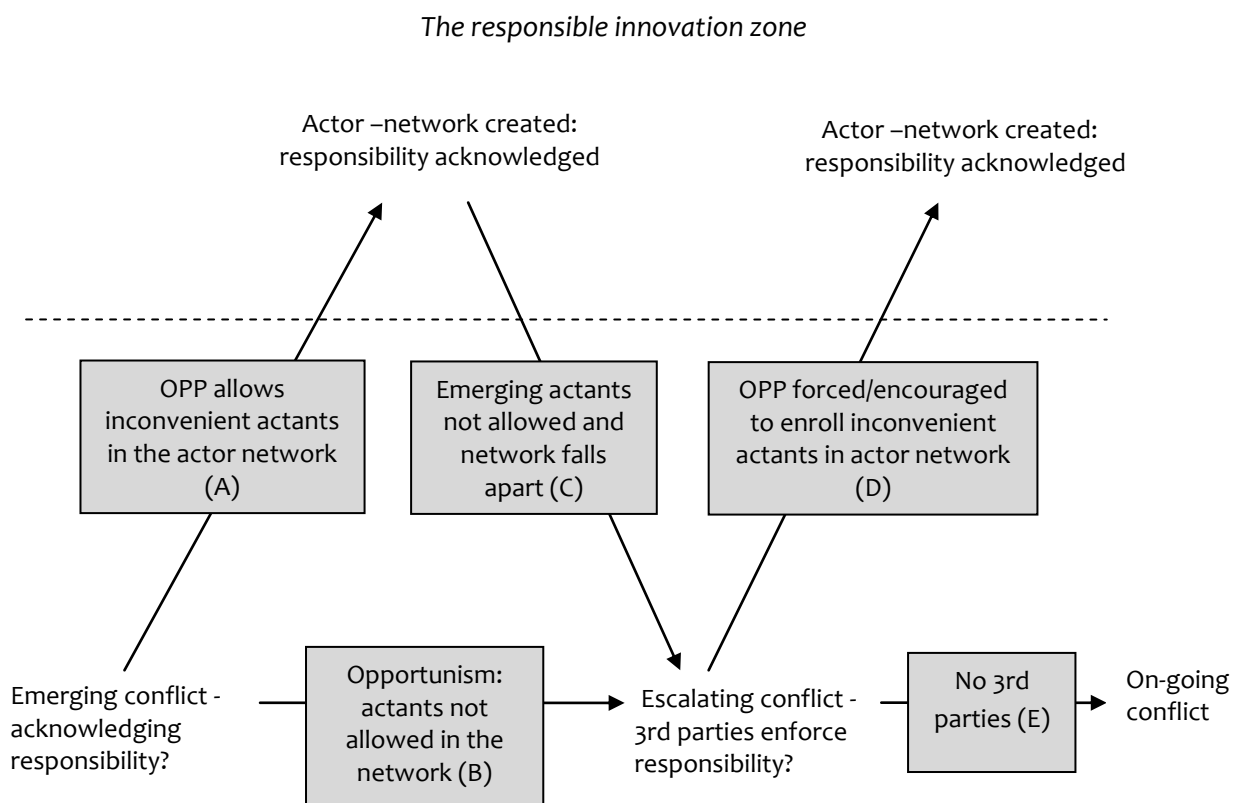
Our research interest in innovation in developing countries and its relevance for poverty alleviation and sustainable development led us to explore how small producers in northern Vietnam innovate and acknowledge responsibility for the broader societal consequences of their innovations. Specifically, we focused our analysis on the dynamics of the societal process that leads towards responsible innovation, which we had previously conceptualized as a 5-stage model (see Chapter 4). We looked at whether traditional institutional theories could be used to develop an analytical framework for exploring the dynamics of this societal process, but found a number of drawbacks with these approaches. For instance, they do not include any explanation of how human interactions are actually shaped, nor do they explain why institutions sometimes create a ground for opportunistic behavior while in others cases innovators acknowledge responsibility for the harmful consequences of innovation. Moreover, there are limited theoretical insights about the role of informal institutions in innovation systems and networks in developing countries. In addition, these theories do not consider how materiality interacts with human actors, even though the cases strongly suggest that the material outcomes of innovation affect human interactions and the actual dynamics of network development.

Actor-Network Theory (ANT) was explored as an alternative analytical tool that could provide an original lens for the analysis and allow closer insights into the dynamics of the societal process in the villages. The ANT view enabled us to make a detailed analysis of the evolution of human and material interactions during translation moments and provided some clues as to why innovators in one village acknowledged responsibility for the harmful outcomes of innovation, while those in the other did not. ANT was useful in describing and positioning the role of informal institutions in innovation systems and networks among groups of small producers.

Figure 5.2 incorporates the insights gained from applying ANT within the model of the societal process of responsible innovation. A harmful societal innovation outcome perceived in the community, and not considered as an acceptable trade-off, can result in an emerging conflict. The innovators, as the OPP, can either acknowledge responsibility or behave opportunistically. If they accept responsibility, they are willing to sort out identities, roles and solutions to address the harmful outcomes of innovation - to enroll them as actants in the network. Once that happens, the community moves into the *responsible innovation zone (A)*. If not, and the innovators ignore

their responsibility, a conflict situation with the ‘inconvenient’ actants will surface (B). This may also happen in a responsible innovation actor network if it becomes unstable due to new and emerging ‘inconvenient’ actants (C) that are not allowed to enroll by the OPP. In the escalated conflict situation, (under the responsible innovation zone line), third parties (local or national government, a court of law, new policies, rules and regulations or existing informal institutions) may become involved in enforcing or encouraging the innovators to find a solution that allows the enrolment of the inconvenient actants (D). If this does not occur the inconvenient actants will remain excluded and the conflict situation within the community remains unresolved (E).

Figure 5.2: Actor networks and responsible innovation.



The comparison of the cases reveals several critical issues in the creation of an actor network of responsible innovation. If the innovation and associated new network constitute a fundamental change in a production system, for instance towards specialization and the division of labor, then the translation moments are more vulnerable and difficult process; many new terms regarding identities, roles and task have to be defined and negotiated. If there are dominant actors that

monopolize the creation of the actor network, then there will be more propensities for opportunism and less acknowledgement of responsibility for harmful outcomes. The dominant OPP, in pursuit of its short-term interests, may not allow emerging and relevant actants to enroll in the network. Conversely, free and willing association with the network is likely to result in more commitment towards community issues. The feeling of voluntarily being part of, and represented by, the network will lead actors to defend the network and acknowledge responsibility for harmful emerging issues. Formal and informal institutions play a critical role in the translation moments by exercising countervailing power.

We consider this study as an initial step to using ANT to understand the societal processes that make responsible innovation possible. The application of ANT to the two case studies also threw up future questions for ANT research. For instance, the power position of the OPP in the creation of a network appeared to be a decisive factor in the selection of actants in the network. If the OPP is dominant, with a relatively untouchable power base, then it may be in the position to impose its will on others. Responsible innovation is about allowing the enrolment of relevant 'inconvenient' actants. Could ANT provide more insights on how power materializes in translation moments by examining how potential actors are included in the problematization process and enroll in the network? A multi-actor platform is an essential requirement in the process leading towards responsible innovation. Could ANT reveal any mechanisms through which a multi-actor platform could break the power of dominant actors? Related to this issue is the question 'what is a relevant actant?'

Informal institutions essentially provide a reference point for network actors to negotiate their positions and for balancing power relations. However, these informal intuitions are very fluid and as such are difficult to understand or conceptualize in theoretical terms. For this (and other reasons) formal policy makers are often reluctant to embrace such institutions. It is worth asking what basic set of institutional requirements is required to create a responsible innovation actor network, what such institutional reference frameworks look like and how they evolve over time as the network passes through translation moments (institutional change).

Our research suggests that once a network moves out of its original geographical area, and/or leaves 'inconvenient' actants behind, then responsible innovation is no longer possible. Our analysis suggests that responsible innovation requires innovators to acknowledge responsibility for resolving problems internally, instead of walking away from them. All the societal actors experiencing the consequences of an innovation should feel represented in the network. This raises the question of the extent to which the community members should be represented by the

actor network's OPP: should all issues be resolved within the community? Is it possible to combine a network evolving out of the village with responsible innovation?

A final issue to consider is the tension between maintaining competitiveness and acknowledging responsibility in conflict resolution within the geographical area of the network. In one case we saw a dynamic network in which the dominant actors were looking elsewhere for new network actors to strengthen their competitive position. This implies opportunism and generates conflict as well as innovation. In contrast, the more stable and inclusive network in the other village acknowledged its responsibilities but was less economic dynamic and less in search of new economic opportunities. This raises the question as to whether there is a trade-off between competitiveness and responsible innovation. Can a stable network in one geographical location also be economically competitive? Can competitiveness and responsible innovation complement each other?

The comparison of these two provides evidence of the methodological strengths and benefits of ANT. The analysis gives insights into agency, process and relations among all the actants in networks of individuals and business. From an epistemological view ANT combines constructivism and positivism and does not make it necessary to choose between the two. This all points to the potential value of ANT in helping to understand and describe responsible innovation. While Law (2007) states that ANT is not a theory, its ability to address these issues does not exclude the possibility that ANT could eventually become a theory capable of explaining the societal processes that lead towards responsible innovation.

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Annex C (to chapter 5): Quotes from field work interviews February 2011.

Power relations in the creation of an actor network

Van Phuc:

“Shop owners introduced cheap silk from China to attract more foreign clients and to make more profit. We silk weavers had to increase our production volume. Households with two or three looms cannot survive.” - Silk weaver (February 2011)

“At the collective we had a regular job. After its closure, we had to establish our dye workshop ourselves. There were few other options.” - Silk weaver (February 2011)

“The silk shops say what designs and colors are best for the silk fabrics and tailors’ items.”
- Dye workshop owner (February 2011)

Bat Trang:

“We followed the new ideas and the experiments of the early innovators with interest. Sometimes we visited them to find out their ideas.” - Ceramics producer (February 2011)

“There are still some producers who choose to work with the old charcoal technology. That is okay.” - People’s Committee administrator (February 2011)

“The early innovations helped us with the introduction of the new technology.” - Ceramics producer (February 2011)

Homogenous and heterogeneous production structures

Van Phuc:

“I subcontract orders to weaving workshops and sub-contract to tailors.” - Silk shop owner (February 2011)

“The old high quality silk craft is disappearing. Many households with one loom have stopped. The mixing of silk and nylon is now common practice. I regret that.” - Retired silk weaver (February 2011)

“Most dye workshops are in the outskirts of the village that is where the environmental problems are.” - Silk shop owner (February 2011)

“The village became very different. There are many different occupations now.” - Household based weaver (February 2011)

Bat Trang:

“Every household is basically using the same technology, and production methods - only the designs are different.” - Ceramics producer (February 2011)

“Because the households do all the steps in the production process, the LPG kiln is not permanently used.”- People’s Committee administrator (February 2011)

Enrolment

Van Phuc:

*“I had to find a dye workshop and build a relationship with them to do the work for me.”
- Silk shop owner (February 2011)*

“I had to hire staff to do the weaving because there were not enough family members around. I had to negotiate new contracts with employees from outside the village.” - Dye workshop shop owner (February 2011)

Bat Trang:

“It was not difficult to sort out new contracts with each other because this is how we do things and we trust each other.”- Ceramics producer (February 2011)

“The same solidarity exists today, we all help each other for the common ‘Bat Trang’ cause. We can all use the brand name of Bat Trang.” - Ceramics producer (February 2011)

Mobilizing allies

Van Phuc:

*“The Silk Association only facilitates export contracts for the bigger silk producers.”
- Household based weaver (February 2011)*

Bat Trang:

“The Ceramics Association represents our interests. We discuss environmental issues and clean technology.” - Ceramics producer (May 2010)

*“The Association plays an important role in training and professionalism. There are members’ meetings organized by the Association. They discuss new technologies and technical experts and artisans from outside (China) are invited. Training is organized.”
- President of Ceramics Association (May 2010)*

“Virtually all small producers are member of the Ceramics Association. Dependent on the level of education, there is environmental awareness.” - President of Ceramics Association (May 2010)

“The Ceramics Association plays an important role in regrouping the small producers. The representatives organize conferences and invite technical experts.” - People’s Committee administrator (May 2010)

“Bat Trang Ceramics Association has developed a trade mark and all the producers living in the village can use it. However the government does not protect it.” - Ceramics Association representative (May 2007)

Materiality / inconvenient actants accepted

Van Phuc:

“Some journalists and researchers make bad reports about the pollution in the village. They harm the reputation of the village.” - Silk shop owner (May 2010)

“People in the villages complain about the pollution. I do not see it. As long as the tourists come to the village I am not so concerned.” - Silk shop owner (May 2010)

Bat Trang:

“The situation in the village became so bad that we either had to stop production or find a cleaner technology.” - Ceramics producer (May 2010)

“Due to the success we are now very aware of other kinds of pollution as well. Some ceramics producers dump their defective items on the roadside. We want them to clean this up.” - People’s Committee administrator (May 2010)

Network Dynamics

Van Phuc

“Silk production is not so profitable anymore. Many people rent out their houses to people from Hanoi. That is more profitable these days.” - Silk producer (May 2010)

“10 years ago there were there 1000 weaving households in the village; now there are only 300. The village has become more a trading place. New shop owners are not originally from the village.” - Silk Association member (February 2011)

“I was very opposed to the shop owners who sell cheap and mixed nylon- silk products from China. That is against our tradition of high quality silk.” - Retired weaver (February 2011)

“I used to work in a state owned department store selling silk. After Doi Moi I establish my own silk shop, I was one of the first and particularly in the beginning it has been a success” - Early innovator (February 2011)

Bat Trang

“Life is good for the moment and stable. We see that neighboring villages try to copy our success. But we still have the Bat Trang brand name.” - Ceramics producer (May 2010)

“There is innovation now in the design of products. And there is a central market place.” - Ceramics producer (May 2010)

Chapter 6

CONCLUSIONS, THEORETICAL REFLECTIONS AND POLICY IMPLICATIONS

The research set out in the five preceding chapters started by reviewing macro-economic growth data, official reports and personal observations of new economic dynamics in poor craft villages in northern Vietnam. These showed that, after the economic policy reforms towards a free and open market economy, small producers in these informally organized clusters seized new economic opportunities that led to business development and economic benefits and also had societal consequences. These involved a mix of positive and negative environmental and socio-economic externalities. Four, partly-overlapping, key debates in contemporary development were used to establish my research framework: poverty, sustainable development, small business and globalization. These were combined to develop the research question ‘how to understand responsible innovation in poor small producers’ clusters in Vietnam following the country’s integration into the global economy?’ The literature reviews discovered a paucity of available literature and data addressing the multi-faceted issue of responsible innovation in informal economic contexts. Little research has been done into these aspects of economic innovation in Vietnam, or other developing countries. Research to date has mostly focused on the macro level and has been informed more by theory or aggregated quantitative data mostly from formal, institutionalized and hi-tech western situations. It became evident that there was a clear need to explore, in a qualitative way, how innovation processes unfold on the ground. This led the research to apply a grounded theory research methodology in order to develop conceptual clarity at the micro-level. The approach made it possible to explain the processes of innovation and responsible innovation in informal contexts, to contribute to theory building, to develop policy suggestions and to identify of issues for further research.

6.1 Summary of findings

The second chapter addresses the issue of whether small firms can innovate. It started with the observation that contemporary economic theory does not provide a suitable definition for assessing innovation in small producers’ clusters, such as those found in northern Vietnam. The article develops a conceptualization of innovation, based on an analysis from economics, business administration, management and other related literature. In overall terms, innovation is described as the process of introducing something new that creates value. Innovation is considered as an interactive process, initiated and owned by firms and entrepreneurs. The definition was operationalized through the use of a qualitative innovation assessment instrument:

a checklist of criteria and threshold descriptions. The instrument proved to be an appropriate and practical methodological tool to identify whether ‘innovation’ was taking place in these informally organized small producers’ clusters. The article identified three craft villages where innovation clearly had occurred and one where it had not.

One notable feature of these cases is that the innovation process is not owned and managed by one firm (which is the way that innovation is conventionally understood as occurring). Instead, the steps of the innovation process were in the hands of several small producers, supported by a large group of interested followers. The village’s social capital provided back-up, trust and information and this enabled learning and risk taking. In this context, it is more appropriate to use the term ‘cluster level’ innovation. Moreover, globalization played a critical role in all three innovation cases; small producers were able to create value by joining global value chains and linking up with global markets. The literature signals that globalization sometimes poses a potential threat; internationally dominant actors may exploit small producers and damage established and balanced socio-economic structures. The definition of innovation developed in this chapter tackles this issue; it is essential that the entity (unit of analysis) introducing the newness owns the value created as well as the process of innovation. In the three cases where innovation was identified as having taken place this was the case. In contrast the bamboo village, which at first glance seemed to be an example of innovation, did not conform to the criteria for cluster-level innovation. New technology had been introduced into this cluster through a partnership between an NGO and an international bamboo exporting factory. The NGO had ownership of the innovation process while the factory - the dominant actor in the value chain - appropriated most of the value through its market monopoly position.

In the course of the innovation assessments in the field, new observations and questions emerged: in most of the cases studies innovation give rise to some harmful societal consequences. These negative externalities were at odds with the goals of poverty alleviation and sustainable development that were part of the rationale for these developments. Surprisingly, one innovation case created positive externalities through the introduction of clean technology. These positive as well as negative environmental and social consequences are potentially significant since the total number of micro-enterprises in the clusters make them comparable with large companies (in terms of production volume and employment creation as well as emissions and their social and economic impact). Chapter 3 starts from the position that it should necessarily be assumed, *a priori*, that poor people will participate in or benefit from innovation. Such conceptualization of innovation should be combined with today’s notion of

poverty alleviation including dimensions such as capability, empowerment and fulfillment of basic needs. In addition, broader views on sustainable development should also be taken into account, including a consideration of the environmental and social consequences of innovation and their distribution among the community providing the source and context for innovation, as well as the importance of participation. Where innovation takes place and is accompanied a concern by all parties to identify and the accept of societal consequences, and is followed by the integration and continuous tracking of these social, environmental and economic outcomes, then this can be termed *responsible innovation*. Where these considerations do not take place the activity carries the simpler label innovation.

Chapter 3 explores ways to conceptualize and operationalize responsible innovation in the context of small producers' clusters in Vietnam. Initially, the research took an epistemologically modernist and positivist approach aimed at an objective and technical investigation of the broader positive and negative externalities arising from innovation. However, it soon became evident that such an investigation was methodologically problematic. The broad array of societal consequences in these communities proved to be too complex to reduce to a preselected checklist of criteria. Moreover, impossible choices arose over which, out of several competing, normative frameworks (local, universal, western) was most appropriate for benchmarking the checklist criteria. Local normative frameworks were very different from the others, in the sense that they were set by context-specific cultural factors, local interests and perceptions about value creation, the distribution of consequences and trade-offs. Villagers, who experienced a significant increase in their incomes, might assess the harmful consequences of an innovation differently than outside researchers. Harmful outcomes might be viewed as an acceptable trade-off for the benefits arising from an innovation.

Chapter 4 abandons the idea of investigating the consequences of innovation in a positivist way. Instead, the chapter proceeds by taking an epistemologically approach based on social constructivism. In this way responsible innovation - like sustainable development - is viewed as a participatory process involving perceptions, human behavior and interactions in the community. It focuses on the ways that innovators acknowledged, or were encouraged to acknowledge, responsibility for the broader consequences of their innovations. The key issue then became how conflicts over assets and rights to property and to development arose and what part (if any) innovators played in resolving these. This chapter advances an empirically-grounded societal process stage model of innovation in which the community members in each case assess and value the outcomes and consequences of innovation against their own local normative

frameworks. In the case of harmful consequences, the community members may feel adequately compensated by other benefits derived from an innovation and accept this as some form of trade-off. This leads the community into what I term the *responsible innovation zone*. Bat Trang is positioned in this zone; the ceramics producers acknowledged responsibility for the air pollution caused previously by the charcoal kilns. Alternatively, harmful outcomes may lead to conflict, which puts the onus on the innovators to acknowledge their responsibility for creating the change that lead to the disputed consequences. In some cases they will behave opportunistically and third parties may not have sufficient influence to change this. In these cases the community will become stuck in a situation of unresolved conflict. More preferably, the innovators will acknowledge responsibility and seek some way of resolving the conflict either through compensation or by modifying the innovation. This again will lead the community to the 'responsible innovation zone'. The stage model thus serves as an analytical framework and helps to position a community in terms of responsible innovation.

Using clusters as the unit of analysis had implications for the way in which responsible innovation was conceptualized. The whole village is involved in the innovation process in one way or another, enjoying the benefits and dealing with any outcomes, which can include negative externalities. The villagers often have mixed interests that are experienced within the geographical boundaries of the cluster. Perceptions of harm and subsequent reactions and behavior can vary, according to the identities and roles of actors in the village, their interplay and interactions. Reaching an agreement about whether outcomes are harmful and whether the trade-offs involved are acceptable or not requires internal negotiation among the different actors in the village. In the best case scenario all actors are able to participate in transparent discussions (a multi-actor platform) which will lead innovators to accept responsibility for the (possibly unforeseen) consequences of their innovations. The conceptualization proposed in this study shows that responsible innovation represents a network of agreements and responsibilities in which all actors in the cluster have agency and support.

Dominant actors are in a position to frustrate or thwart such a multi-actor process by overruling the negotiation process. This might be a direct result of globalization: Nadvi (1997) shows how delocalization can introduce differentiation or specialization within clusters of producers in developing countries, creating dominant actors. The Phu Vinh case illustrates this point. The export companies gained a monopoly position and were able to set a lower price for the household producers. The export companies, as dominant actors, have no interest in discussing any internal conflicts about the uneven distribution of value added by the innovation. A similar

pattern emerged in Van Phuc, where the shop owners gained a dominant position and indirectly led the dye workshops to pollute by ordering new colors that required the use of chemicals. By contrast, in Bat Trang, the example of responsible innovation, no significant dominant actors emerged from the new set of market relations. The Ceramics Association was the main discussion platform and remained transparent and inclusive. This allowed a multi-actor process that made it easier to reconcile the benefits of innovative technology with environmental improvements.

Chapter 5 explores how a network of agreements can be created in a multi-actor context. It focuses on how actors acknowledge responsibility in the societal process by comparing two Vietnamese clusters of small producers. In one community the initial innovation took place and resulted in mostly beneficial consequences and the process moved into the responsible innovation zone while in the other case the community became locked in unresolved conflict over rights and the loss of rights. The chapter considers various theoretical perspectives to understand the processes that lead innovators towards acknowledging their responsibility for the harmful consequences of innovation. However, none of the associated analytical frameworks were able to address all the issues at hand: innovation process, human interactions, conflict resolution, participation and material outcomes. As an alternative, Actor-Network Theory (ANT), which is more a methodological lens to examine an issue and its context than a theory, was applied. This enabled me to describe, in dynamic terms, how the human and non-human interactions evolved into actor networks. The ANT lens provides a conceptualization tool that was epistemologically challenging; combining the ‘real’ outcomes of innovation (positivism) with how humans perceive, respond and react to events and to one another (constructivism). The chapter compares two cases describing the processes that led towards the formation of the actor networks. It concludes that responsible innovation is a situation in which all relevant human and non-human ‘actants’ in the community are enrolled in a network. The human actants join the network and support the innovation from a basis of free choice from which they enjoy - from their perspective - sufficient benefits. As responsible innovation concerns the whole community and the ANT lens (by definition) considers all actants in a field, there was a good match between the theory base for responsible innovation, the methodological approach (ANT) and the empirical evidence observed in practice.

6.2 Theoretical reflections

A major part of the research concerned the conceptualization of innovation and responsible innovation in the context of a developing country. As explained in the introduction and the

subsequent chapters, this was essential due to blind spots in theories and the limitations of macro-economic analysis of industrial development, entrepreneurship, innovation capacity and globalization. The conceptualizations advanced in the four empirical chapters are rooted in micro-level observations. The on-going reflections and interplay between the empirical observations and theoretical references - following the practice of applied grounded theory - brought new theoretical ideas and elements, which are discussed below.

In recent decades, there has been growing interest in role of entrepreneurship (at the micro and small enterprise level) within development. Various theories, approaches and models have evolved, including appropriate technology (Schumacher 1973, Akubue 2000), technology transfer models (Al-Ghailani and Moor 1995, Stewart 1977), micro-credit (Khandker 1998, Chavan and Ramakumar 2002), business development services (Dawson 1997), and more recently the bottom of the pyramid concept (Prahalad 2006). All these models share the view that entrepreneurship - directly or indirectly - is a potential route for poverty alleviation, and should be supported by public programs and policies. These approaches typically focus on gradually increasing production and access to markets as a means of improving income and employment opportunities. The western idea of innovation, through radical technological developments and accessing new (export) markets has less relevance for small producers working in informal contexts. Chapter 2 demonstrated the existence of innovation in small producers' clusters in Vietnam, a process that is initiated and owned by the villagers themselves, using their own strengths and initiative. These innovations are serious business, linked with globalization and there is no reason to downplay their potential or significance in terms of value creation and accessing new markets. Up to now only a few studies have documented such innovations. Bhalla (1989) describes innovations from small producers working outside the organized and formal economy in five developing countries. Van Dijk and Sandee (2002) discuss case studies, including the Kenyan food processing sector, furniture making in Nicaragua and tile manufacturing in Indonesia that highlight patterns of innovation adoption and diffusion. Gebreyesus (2011) discusses innovation and micro-enterprise growth in Ethiopia.

It should be noted that other manifestations of innovation in developing countries have also been discussed in the past decade, particularly in more formal, advanced, medium and large sized, industrial sectors. The numerous examples include the automobile industries in Mexico, Brazil and India (Vallejo 2010, Humphrey 2003). In China, the innovation spill-over effects of foreign direct investment to other industrial sectors have been addressed by Wenqing (2003). Research in India has focused on the country's role as global innovator for ICT and hi-tech products (Dutz

2007). The innovation and sustainable development debates in developing countries also have discussed *leapfrogging*, a form of accelerated development which involves skipping inferior, less efficient, more expensive or more polluting technologies and industries and moving directly to more advanced, cheaper or greener ones (Lewis 2007).

At the same time, there is a wide acknowledgement (in both research and policy circles) of the need for poverty alleviation and sustainable development and of the potential of innovation for contributing towards this. In Africa there are neglected opportunities for generating and appropriating value in agriculture and services (Kaplinsky 2007). Kaplinsky (2007) argues that the focus on sustainable incomes requires a shift in development strategies from industrialization to innovation. Innovation systems theory is increasingly being applied to understand these phenomena in developing countries. Lundvall et al. (2009) stress the importance of the *Doing, Using and Interacting* (DUI) concept of innovation, as opposed to the *Science-Technology-Innovation* (STI) concept. The first focuses on innovations, on interactive and on *the job* learning through informal structures and relationships, which Lundvall considers highly relevant for developing countries. STI, by contrast, involves innovation characterized by high technology, innovation strategy and formal R&D practices. Chena and Puttitanuma (2005) argue the importance of strengthening the intellectual property rights framework in developing countries – as a prerequisite for stimulating innovation.

There are plenty of studies of innovation in developing countries. However, when the actual manifestations, types of firms, processes, technology and actors involved are examined more closely it becomes obvious that the definitions and understandings of innovation differ. Most references borrow concepts, definitions and quantitative measurement practices from the western-based STI literature, involving indicators such as R&D expenditure and patents (Freeman and Soete 2007). By contrast, the Vietnamese innovations could not be evaluated by such indicators. These innovations arose from an attitude of open mindedness, mutual learning and on the job experimentation. Moreover, there are no numerical data available to measure these kinds of processes and their role in innovation. Statistical offices typically do not even include the informal sector in their databases. Thus there is a large gap in the data available about innovation in developing countries, particularly those with a strong informal sector, a reflection of the way in which innovation is conceptualized by mainstream development economics. To strengthen economic analysis of the potential of innovation in developing countries it is important to have a more systematic and generic conceptualization of innovation. This research goes some way to doing that, building a generic systematized conceptualization that combines universal notions

with specific characteristics relevant to the informal context of a developing country. The research showed that it is possible to assess the qualitative aspects of innovation in terms of process, newness and value creation. The qualitative assessment instrument developed in this research has shown itself to be a practical way to assess innovation in informally organized contexts where numeric data are absent.

Chapter 3 argues that small producers benefit from the new economic dynamics once they create value through an innovation. If the consequences of innovation lead to emerging societal conflicts and these are addressed and resolved; the community can be said to be in the zone of responsible innovation. These harmful societal implications are increasingly discussed in current debates on open, social and sustainable forms of innovation (Hirschmann and Mueller 2011). The focus that has been developed in this thesis, on societal processes, could provide a missing conceptual link, capable of uniting classical, technical and economic oriented innovation research with new ways of thinking about innovation and its real contribution to sustainability. This approach operationalizes participatory and inclusive development dimensions, a central element in discourses about sustainable development, while also addressing essential elements of poverty alleviation - such as the capability approach (Sen 1999), basic needs (Streeten 1984), empowerment and citizen rights (Friedmann 1996) community development and livelihood approach (Rakodi and Lloyd-Jones 2002).

The societal process surrounding innovation is a distinctive characteristic in the conceptualization of responsible innovation developed in this thesis. This aspect is in contrast to the projectified approach of Corporate Social Responsibility (CSR) and stakeholder analysis as described by Frederick (1960) and Freeman (1984). A projectified approach assumes a predictable process with outcomes that can be anticipated. However, the societal processes analyzed in this research were far from predictable. They were open-ended processes, involving a multitude of actors, some of whom come and go. From this perspective, it makes more sense to shift attention from the *quality of the outcomes* to the *quality of the process*. This is line with the growing attention being paid in western business management practices to total quality management, process control and quality assurance. Increasingly, companies are focusing on these aspects (together with process improvement and benchmarking) as a potential source of sustainable competitive advantage (Powell 1995).

This focus on the quality of processes could contribute to the participatory dimensions of sustainability. As discussed in the introduction, sustainable development is often conceptually fuzzy (Daly 2006). Attempts to express sustainable development in absolute and objective terms,

often lead to disagreements about the appropriate measurements and indicators to include on checklists and the normative framework of benchmarking (Bell and Morse 2008). The latter has been a particular problem in the ongoing global debate about the governance of climate change notably at Kyoto and Copenhagen (Hasan and Dwyer 2010). The societal process approach, which specifically acknowledges that sustainable development is participatory and should accept and recognize different normative frameworks - may provide a useful additional perspective to define, discuss and seek agreements in sustainable development debates. Indeed, it has been argued that the only approach to sustainable development is through participative processes of this kind (Carley and Christie 1993, Roome 1998 and 2011)

Lastly, the use of ANT in chapter 5 revealed the tensions inherent between entrepreneurship (required for innovation) and responsible innovation (which is inclusive by definition and thereby potentially more sustainable). Can these two happily co-exist? Free market economists and innovation theorists see competition as essential to stimulate innovation (Ahn 2002). Competition is essentially about winners and by extension about losers and this potentially creates conflict. This is captured in the Schumpeterian notion of *creative destruction* under which new ways of creating value normally undermine existing value creation activities (and this livelihoods). In this sense all innovations generate losers as well as winner. The concept of responsible innovation suggests that such societal conflicts can be resolved. This brings us back to the inconvenient issue raised in chapter 4; stable networks where conflicts are more readily resolved are not necessarily the best mechanisms for innovation. Can we find an optimum balance and the mechanisms that provide a bridge between these two situations?

6.3 Policy implications

Academics (Desai 1998) and policy researchers (Blackman 2008) have observed that government policies in emerging economies have often prioritized economic growth and underplayed any harmful societal consequences of such policies. Thailand, China and India are cited examples where high rates of economic growth have been achieved with little consideration given to environmental and social consequences. The latter policies reflect the trade-off issue between private and public interest (and the allocation of development rights). Blackman (2008) argues that sustainable development is gaining a more prominent place on the policy agenda in emerging countries. For example, in Vietnam, official policy acknowledges sustainable development: “Fast, efficient and sustainable development is consistent with the realization of social progress, equality and environmental protection” and “socio-economic development

should be closely combined with the protection and improvement of environmental resources, ensuring a harmony between the artificial environment and natural one, which will maintain biodiversity” (Vietnam Agenda 21 Office 2008). Many programs have been devised to pursue sustainable development. In reality, the Vietnamese government has limited competence or leverage to enforce these programs. The policies that exist are rarely consistently enforced on the ground and this is one reason why many craft villages have become increasingly polluted in recent years¹⁰.

Despite the recent interest in and awareness about CSR in business circles, the general assumption that governments bear the sole responsibility for addressing and protecting their people from the harmful environment and social impacts of economic activities is another obstacle towards the adoption of sustainable development practices. People rarely recognize that poor small producers are able and or likely to acknowledge their responsibility for resolving environmental or social conflicts. Against this background it is quite remarkable that the ceramics producers in Bat Trang took the initiative and responsibility for introducing a clean technology. In a sense this can be seen as private initiative, demonstrating the capability of poor people to be drivers of responsible innovation and sustainable development. This offers an opportunity for exploring ‘alternative’ policy options. Chapter 5 conceptualizes responsible innovation as the result of a societal process in which internal and informal mechanisms influence innovators’ behavior. One could view this process as an extra layer of governance. Although policy makers may be reluctant to acknowledge the influence or power of informal mechanisms, this insight highlights the potential for encouraging shared responsibility. It is worth exploring whether socio-economic policy can facilitate such societal processes and encourage institutions to support responsible innovation (particularly in step 5 of the model of different stages).

The clusters of small producers analyzed in this study are typical of much larger numbers of poor small producers in Vietnam (and in other developing countries). In Vietnam, there are many comparable villages that are experiencing new economic dynamics as a result of entrepreneurs seizing new opportunities, but where poverty persists and new social and environmental problems are emerging as a result of those new dynamics. Thus there is scope for encouraging responsible innovation to enable larger numbers of small producers to participate in and benefit from these new economic dynamics, without creating unforeseen and negative consequences that endure without resolution. Although there are currently no specific policies or programs that focus on promoting innovation in these contexts, it is worth reflecting on the implications of

¹⁰ Observations of valorization panel members during valorization meeting in Hanoi, February 2011.

introducing such policies. Before turning to look at the specific policy implications for these informal small producers' settings, it is important to make several observations about the process of policy making itself because innovation policy typically focuses on technology transfer and encouraging R&D expenditures in SME and large firms (OECD 2005).

Evidence-based policy making is dominant these days and reflects the 'modernist' faith in policy informed by reason - *what matters is what works* (Pawson et al. 2005, Sanderson 2002). There are several overall policy development approaches and models, such as the 'policy cycle' (Jann and Wegrich 2007) and the logical model (McLaughlin and Jordan 1999). Policy frameworks are usually embedded in larger theoretical principles and perspectives, typically developed from fundamental research. Within these broad frameworks, policy-makers use a wide range of qualitative and quantitative research sources - including many different research procedures, techniques or methods - for generating evidence, setting priorities and making specific policy decisions (Howlett and Ramesh 1995, Nutley et al. 2000, Fisher et al. 2007).

With regard to *innovation policy*, the dominant principle guiding policy development is based on innovation systems theory (Lundvall and Borrás 2005, Edquist 2002). This sees innovation as surrounded by a complex of supporting institutions that provide technology, education, finance and the necessary regulatory frameworks. The institutions within these innovation systems exist to overcome obstacles, create trust and stability, structure actors' interactions and provide information to (potential) innovators. The formulation of innovation policy requires an understanding of causality within the specific problems and constraints, institutions, innovation capacity and outputs. Birkland (2011) argues that policy makers usually rely upon a reductionist approach - such as provided by the approach of factor analysis - possibly supplemented with outcome forecasts (via cost/benefit analysis and environmental impact assessment for instance) to select policy priorities and set targets against normative benchmarks. The resultant interventions usually consist of R&D subsidies, tax incentives, setting technical standards, training and technology development, access to finance, innovation platforms and patent protection. Following on from the preceding chapter, one could call this 'projectified' policy, which assumes that the process of achieving the desired innovation outcomes is predictable and can be guided and controlled by providing incentives, and determining institutions as set by rules and regulations.

The projectified or rational, evidence-based, approach to policy making for innovation has been challenged on the grounds that it does not pay sufficient attention to the complexity and dynamism of practical realities and constraints (Sanderson 2002, Pawson et al. 2005) and that

while rules and regulations determine institutions they are not necessarily followed, nor are the rules and regulations able to cover and integrate economic, social and environmental outcomes. In other words, the policy approach should not focus on single, isolated, issues, particularly in the case of complex multifaceted phenomena, such as responsible innovation. The issues should be regarded as *meta-problems* that consist of many interconnected issues (Roome 2001); one problem within a set is likely to impact on other aspects of the set and no one organization can adequately address all of the problems in the set (Chevalier and Cartwright 1996). Policy responses to emerging meta-problems should not focus on single issues. Warren (2005) observes that policy formulation rarely takes dynamics into account. Approaches to innovative policy have recently been developed in an attempt to address the dynamic and complex interrelationships that exist between the multitude of factors that influence policy making and policy outputs. Lundvall and Borrás (2005) see the contours of a new innovation policy emerging, which they call *knowledge policy*. This recognizes that innovation and competence building involve many different sources of knowledge and that innovation itself is a learning process. This is consistent with the notion that sustainable development is a process based on learning, innovation and change (Roome 2001). Nill and Kemp (2009) have suggested the need for evolutionary approaches to support sustainable innovation policies. Dunlop et al. (2001) have developed a policy model to reflect the dynamism of roles and policies (and subsequently of emerging conflicts) for large enterprises working in chaotic environments. They emphasize the fluidity and complexity of interactions faced by enterprises working in such environments. Sutton (1999) argues that policy development should not be seen as being an expert-based linear policy process, but as a societal process involving the research input of experts, the opinions and perceptions of different stakeholders and the power-plays and politics of policy makers who prioritize and negotiate their choices. In this view, policy processes can be considered as a *policy network*: made up of a group of individuals and organizations that share belief systems, codes of conduct and established patterns of behavior. Establishing an innovation policy involves not only a search for acceptable technical solutions, but also a whole range of interactions that occur in an underlying societal network.

The challenge and importance of incorporating dynamics, networks and processes in policy-making reflects the arguments developed in this research. The societal processes that lead towards responsible innovation (or not) are not predictable and controllable; they are characterized as meta-problems and steered by the chaotic interactions of a number of human and non-human actors. Macro policy frameworks that are couched in terms of inputs, incentives or rules to address specific constraints seem ineffective in such circumstances. Innovation in

informal situations is highly uncertain and context-specific; no-one knows what the innovation outcomes will be, what societal consequences will materialize or how the community will respond (choosing conflict or trade-off). Moreover, giving the normative framework of the societal process, it is likely that the various policy network actors - innovators, villagers, researchers, policy makers - will not be able to agree on a set of benchmarks for responsible innovation policy targets relating to the environment, social indicators, labor conditions and health indicators and so forth.

As an alternative to such an approach this research suggests that policy for responsible innovation should focus on the dynamics and the quality of the societal process (as suggested in the conceptualization of responsible innovation advanced in Chapter 3). The policy challenge is to facilitate a community to move swiftly through the five stages of the societal process. In concrete terms, the policy should support a community: to assess the harmful societal change (stage 1); to understand the link with an innovation (stage 2); to weigh the positive and negative outcomes of the innovation (stage 3); to mediate and encourage innovators to behave responsibly (stage 4), and; to involve third parties to enforce or to provide incentives to innovators to acknowledge their responsibility (stage 5). The model's theoretical reference points identify several possible problems, constraints and obstacles that may hamper the societal process: bounded rationality, information asymmetry, opportunistic behavior, power dominance and the lack of institutional frameworks, to name but a few.

That brings us to another challenge; these problems, constraints and obstacles may vary considerably from village to village. What is acceptable in one village may be the cause of conflict in another. Responsible innovation will unfold differently in different locations and thus a macro policy, with a *one size fits all* approach will probably not be effective. It is for these reasons that Brundtland (1987) suggested that there was no single blueprint for sustainable development because what is sustainable is determined by the characteristics and conditions found in a given context. The current research suggests the need to develop micro-level policy responses that are context-specific if the policy objective is to promote sustainable development through innovation at the cluster and community level. In terms of the Vietnamese cases, these could manifest in an 'independent' policy making and implementation entity at the village level. Such an entity within the village administration would be able to analyze and understand the innovation outcomes, their societal consequences and locals' perceptions. This research advances three methodological instruments that could be helpful in this respect:

1. The innovation assessment instrument. With the criteria checklist, policy makers in the village can qualitatively assess whether something new, produced by an informally organized unit can be labeled as an innovation. In principle, innovation creates value and improves the competitiveness of the unit concerned.
2. The societal process model of responsible innovation. With the help of this model, policy makers can position the issues and identify and understand any emerging conflicts, factors and, if and where, the (context specific) process runs into obstacles.
3. The ANT lens enables policy makers to understand the dynamics of the process and assess whether all the actants are involved or not. Moreover, ANT provides insights into new and emerging actants and the directions in which the network is evolving. It is essential to understand whether a village is being left behind with the harmful innovation outcomes, while the focal actors - appropriating most value - move on to other locations.

The credibility of the policy making entity at village level will depend on its autonomy and ability to interpret the innovation manifestations, societal outcomes and perceptions and to autonomously develop and implement context-specific 'responsible innovation' policy measures. Along the five stages of the model there are various possibilities for policy intervention to facilitate socially responsible innovation. Table 6.1, on the next page, suggests several ways of doing so. Moreover, context specific policy measures should be monitored on an on-going basis so as to respond quickly to emerging issues in the responsible innovation societal process (this in line with the policy cycle approach).

It is worth noting that the suggested policy interventions are about improving the quality of the process, rather than providing incentives, or setting rules and regulations. This implies the promotion of multi-actor platforms. However, there is obviously a danger that the dominant actors will attempt to manipulate, dominate and overrule the multi-actor process if they want to evade acknowledging responsibility. The policy making entity has to strive to be neutral, impartial, and transparent and involve external sources of information.

Table 6.1: Policy options to facilitate responsible innovation.

Stage in the societal process	Possible obstacles in the process	Policy process options to overcome problems/constraints
Stage 1: Whether there is a perception of a harmful societal change or not.	The community is not able to assess and agree whether there is a harmful or beneficial societal change.	Policy makers scan societal changes and inform villagers accordingly. They could organize multi-actor meetings to present information about the change, involving external ‘neutral’ partners. They keep the long-term impacts on health, environment and social structure stemming from innovation under review. Villagers can identify, bring forward and discuss the problems in multi-actor platform meetings.
Stage 2: Whether the societal change is a consequence of the innovation or not.	The community is not able to agree that the societal change is a result of the innovation.	Policy makers involve external research institutions - that are considered neutral - to provide analyses on the causality between an innovation and any harmful societal changes. Policy makers present information from these different sources and organize meetings and facilitate the villagers in interpreting whether or not there is a link.
Stage 3: Whether the societal change is considered as a trade-off or if a conflict is emerging.	The community is not able to assess or agree whether the harmful consequences of innovation are compensated by the benefits of the innovation.	Policy makers present as much information as possible about the costs and benefits of the innovation, so that villagers themselves can balance and judge according to their norms. The interpretations of such cost-benefit analysis are discussed in multi actor meetings. Policy makers make the potential conflicts explicit.
Stage 4: Whether innovators behave altruistically or opportunistically.	The innovators are not explicit about whether they are behaving altruistically or opportunistically. There is ambiguity in their attitudes and behavior.	Policy makers challenge the innovators to take a position over whether they acknowledge responsibility or not. Policy makers encourage the innovators to behave altruistically and call them to account.
Stage 5: Whether there are external parties to enforce innovators to take responsibility.	There are no third parties or existing institutional arrangements to enforce the innovator to acknowledge responsibility.	Policy makers sort out and facilitate juridical procedures, mobilize existing institutions or encourage institutional change/reform.

6.3 Research agenda

Theory

The previous paragraphs compare the research outcomes against various theories and policy issues concerning entrepreneurship, innovation, process, poverty alleviation and sustainable development in emerging economies such as Vietnam. These reflections lead to suggestions of possible areas for future research. These are set out below.

It is evident that entrepreneurship, which takes place in various economic sectors and types of enterprises, can make a contribution to economic development and poverty alleviation in developing countries. This research adds particular evidence of the *innovation capacity* found among informal small producers in northern Vietnam. Although there are few similar examples in the literature, this research shows that it is, nonetheless, a serious and significant form of innovation. Although these innovations are partially hidden and are not included in formal statistics, informal clusters of innovating small producers have a significant impact on the creation and retention of value in local communities. They lead to employment creation and income generation (positive outcomes) as well as generating pollution and increased gaps in income (negative outcomes). Further replication of the research in Vietnam (and other developing countries) could strengthen my assertion that innovation capacity is widespread among informally organized small producers, and that their innovations involve newness, processes and value creation.

The literature describes and analyzes numerous examples of other manifestations of innovation among large enterprises and formally structured SMEs in developing countries. However, these notions and definitions of innovation differ substantially and are measured through a variety of indicators. There is, to date, no generic and comprehensive conceptualization that covers innovation in these types of companies as well as in the informal contexts, described in this research. Further research could focus on developing such a generic conceptualization framework for distinguishing what is innovation in various manifestations and forms, from what it is not. The framework could be further elaborated with innovation categories that allow systematic investigation and comparison of the different manifestations of innovation. The innovation assessment instrument, advanced in chapter 2, could serve as an input to assess innovation using qualitative criteria (process, newness and value creation).

The suggested replication of the research and broader explorations, investigations and descriptions of cases according to different categories of innovation - including the less obvious

and overlooked - could provide the opportunity to develop a qualitative evidence base of data on innovation processes and outcomes. By comparing the empirical material, patterns could be identified and subsequent hypotheses be developed from various angles for further quantitative analysis.

One angle could be to compare the significance of small informal sector innovation within a certain geographical area or economic sector with other types of innovations, in terms of basic economic indicators such as employment creation and income generation. A similar analysis could be done comparing innovation categories that are in the responsible innovation zone with those that are not. Additionally, one could investigate which categories of innovation create societal conflict as a result of their social and environmental consequences. From these explorations, hypotheses of the factors and conditions that promote or hamper responsible innovation could be developed and tested for causality. The responsible innovation model developed in chapter 4 could be of help in such analyses. Such analyses could also validate the applicability of the model for other contexts.

This qualitative evidence base could also provide opportunities to combine micro and macro research. In the introduction it was observed that macroeconomic evidence does not provide any clear answers about the effects of globalization on poverty alleviation. The combined micro-macro analysis could reveal more about the context-specific processes and conditions under which certain categories of poor people can benefit from globalization. This will be scientifically challenging, because macro-analyses typically do not involve process, dynamics and conflict descriptions at the micro level. Nevertheless real breakthroughs in the understanding of the development process, its consequences and governance require research that spans different levels of ontology. In the same way the research reported in this thesis has focused on innovations and its consequences found in a village setting. This implies that all consequences are contained within a relatively local boundary. In practice this is not the case. It is possible to envisage that some consequences travel beyond the boundary of the village. These could be economic and environmental and possibly social. While a local institutional mechanism might contribute to responsible innovation in a local context, these effects would require mechanisms at other levels and scales of organization. How these might work would need to be a subject of further investigation.

It will be of particular interest to explore further the relation between competitiveness and conflict. In free market settings, it is assumed that competition increases innovation. A consequence of this is that there will be conflicts once in a while. Can responsible innovation and

'healthy' competition co-exist? Competitive advantage is sometimes obtained by the irresponsible use of resources or waste disposal. Further research could explore the line or balance between competition and conflict in responsible innovation.

Finally, this research combines positivist and constructivist concepts and issues - innovation systems, institutional theory, clusters and network theory. In different ways each of these theories are relevant but no single theory provides an analytical framework or comprehensive theory to explain responsible innovation. ANT provides a useful lens but is not a theory *per se*. Further research could work on developing an analytical framework as well as a theory for responsible innovation by using ANT as the methodological approach. More research that combines these theories in informal contexts may add new insights to understand responsible innovation processes.

Policy

The paragraphs (above) on policy implications advocate developing context-specific policy making capacity at the village level in order to facilitate the resolution of societal conflicts. These would promote responsible innovation by enabling the community to follow the stages of the model in order to arrive in the responsible innovation zone. In order to do so, it is essential that the local policy-making entity analyzes and monitors the societal process and develops policy measures. For this to occur it is essential to create a multi-actor network is essential. This idea could be developed by establishing a village policy making entity as a field experiment within some villages and then explore and analyze how the process works out in practice.

Before an innovation policy comes into being, apart from the technical solutions, there is a whole network of interactions in an underlying system of societal and political processes. This is very much in line with the understanding of ANT. In this sense responsible innovation policy could be viewed as an actor network in which human and non-human innovation actants are enrolled and societal conflicts are resolved. It would be interesting to further research and analyze how a policy network continually renews and updates itself through strings of translation.

Specifically, such ANT-based policy research into responsible innovation could explore the translation moments (Callon 1986) that lead towards the creation of a context-specific policy network. This would imply the establishment of an obligatory point of passage - policy makers at the village level - defining the *problematization* (1st translation moment). This would contain the identification of the obstacles towards getting to the responsible innovation zone and the development of policy measures to overcome these obstacles. The *interessement* (2nd translation

moment) is the stage where policy makers initiate consultations and negotiations through multi-actor platforms to convince relevant actors to accept the roles and identities. During the 'inscription' (3rd translation moment) actors accept the policy implications and the associated rules of the game. Finally, the network is completed (4th translation moment), the policy is implemented and operationalized and the actors play by the game and feel represented by the policy-makers.

It is important to note that this is a cyclic process of ANT strings. New challenges will emerge, as well as new actants, new innovation outcomes and so forth. At repeated moments there is the possibility that the policy actor network will degrade and fall apart, necessitating the policy makers to go through the translation moments again.

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