

INCLUSIVE INNOVATION SYSTEMS

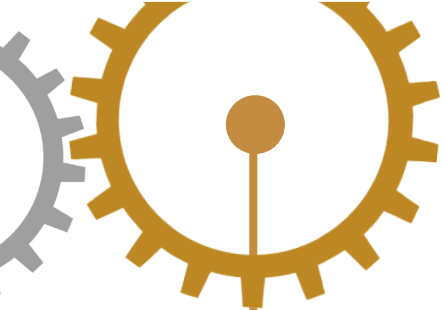
HOW INNOVATION INTERMEDIARIES CAN STRENGTHEN
THE INNOVATION SYSTEM



A CASE STUDY OF VIETNAM



Benjamin van der Hilst - August 2012



SUMMARY

The world recently welcomed its 7 billionth human inhabitant, and sadly enough more than half of these people are living in poverty. Four billion poor struggle to get sufficient access to basic needs like food, water, healthcare and shelter. This group is referred to as the Base of the Pyramid, or BoP

There is a need for pro-poor, or inclusive innovation. This requires broad support from governments, companies and other organizations around the world. It is not only about making products and services for the poor, but also about enhancing innovative capacity at the BoP. Innovation intermediaries seek ways to support inclusive innovation. They however lack a sound methodology to assess current status of innovative capacity, and identify opportunities for intermediary intervention to strengthen it.

To that end, this research introduces the notion of *Inclusive Innovation Systems*. Together with the Functions of Innovation Systems (FIS) approach it is presented as a framework for analysing the set of actors, institutions, and societal subsystems that contribute to the emergence of inclusive innovations.

This research shows how a tool, which is based on the Functions of Innovation Systems approach, can be used as a structural approach to come to context specific recommendations for innovation intermediaries. For evaluation purposes, the tool is applied to the agro-food sector of Vietnam.

Tóm tắt

Thế giới vừa mới chào đón công dân thứ 7 tỉ nhưng có một điều đáng buồn đó là hơn một nửa trong số họ phải sống trong đói nghèo. Bốn tỷ người nghèo phải vật lộn đấu tranh để có thể có cơ hội tiếp cận với những nhu cầu cơ bản như thức ăn, nước uống, dịch vụ y tế và một mái nhà để cư ngụ. Nhóm này được định nghĩa như là Đáy của Kim tự tháp (hay BoP).

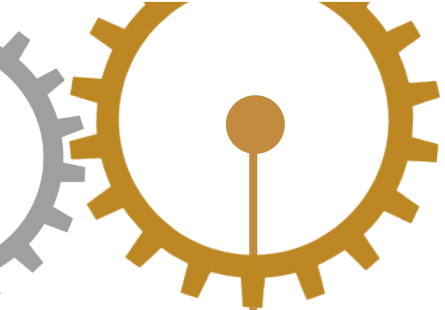
Do vậy cần thiết phải có những chương trình vì người nghèo dựa trên những sáng. Điều này đòi hỏi sự hỗ trợ rộng rãi từ chính phủ, các công ty và tổ chức khác nhau trên thế giới. Nó không chỉ là việc tạo ra các sản phẩm và dịch vụ mà người nghèo có thể tiếp cận được mà còn khuyến khích khả năng sáng tạo ở nhóm Đáy của Kim tự tháp. Sáng tạo đóng vai trò trung gian nhằm mục đích hỗ trợ cho các sáng kiến sao cho có thể đáp ứng được sự trông đợi của các nhóm Đáy của Kim tự tháp này. Tuy vậy, họ vẫn thiếu phương pháp và cách thức để tiếp cận với khả năng sáng tạo và xác định những cơ hội nào là dành cho các hoạt động nhằm tăng khả năng sáng tạo đó.

Nghiên cứu này do đó cũng giới thiệu quan điểm của những hệ thống dựa trên sự sáng tạo. Dựa vào những phát triển gần đây của hệ thống lý thuyết và ứng dụng thực tế của học thuyết Đáy của Kim tự tháp, hệ thống dựa trên sự sáng tạo này đòi hỏi tư duy và quan điểm về các ý tưởng dựa trên sự sáng tạo. Đồng thời, hệ thống này cũng đưa ra những quan điểm về những cá nhân, cơ quan và các hệ thống marketing xã hội nhằm làm rõ hơn cho những ý tưởng dựa trên sự sáng tạo.

Dựa vào các chức năng của hệ thống sáng tạo mà một công cụ được thiết lập nhằm phân tích vai trò của hệ thống dựa trên sự sáng tạo. Các sáng kiến đóng vai trò trung gian có thể sử dụng công cụ này để xác định những yếu điểm mang tính hệ thống và đầu vào để thiết lập những cơ chế nhằm làm nổi bật lên những hệ thống sáng tạo.

Để đánh giá khả năng của công cụ này, ta có thể áp dụng trong các ngành liên quan tới nông sản ở Việt Nam, đặc biệt chế biến khoai tây. Những ứng dụng của công cụ này đã cho thấy những giá trị và sức mạnh của nó đồng thời cũng vạch ra những cơ hội và thách thức tiềm ẩn. Ưu điểm của các công cụ này là nhấn mạnh mối quan hệ giữa các thành phần và sự tiếp cận đa đối tượng liên quan và đối tượng ưu tiên. Đồng thời, công cụ này cũng đưa ra nhiều chỉ dẫn có giá trị nhằm làm tăng tính ứng dụng của nó trong thực tế.

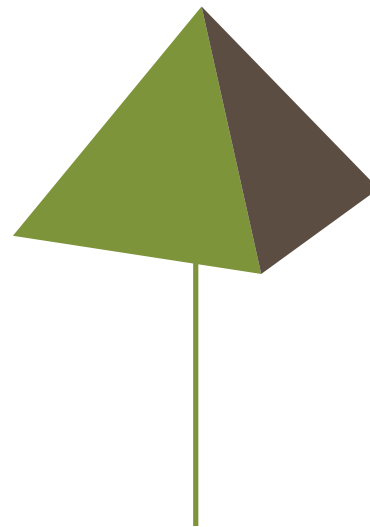




CONTENTS

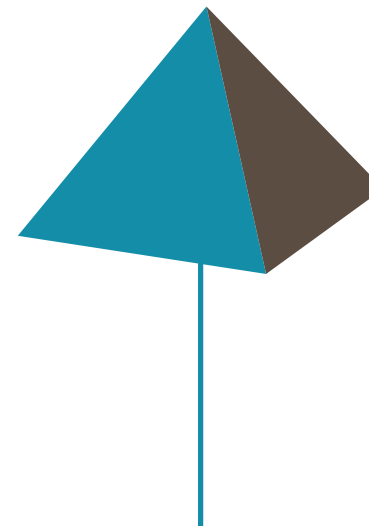
INTRODUCTION 1

ACKNOWLEDGEMENTS 56
REFERENCES 57
ANNEX A 60
ANNEX B 62



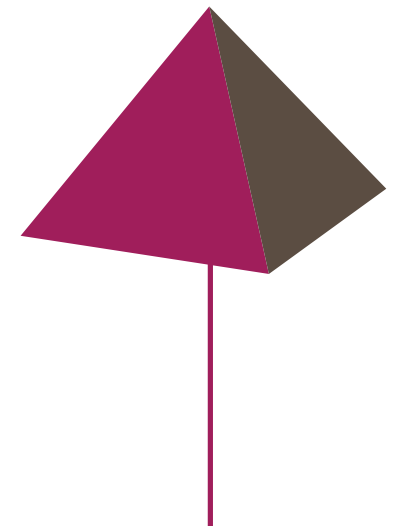
DEVELOPMENT

LITERATURE REVIEW 6
THEORETICAL FRAMEWORK 13
TOOL DEVELOPMENT 18
METHODOLOGY 21



APPLICATION

INTRODUCING VIETNAM 26
ASSESSMENT 29
ANALYSIS 39
RECOMMENDATIONS 42



EVALUATION

TOOL EVALUATION 48
CONCLUSION 52
DISCUSSION 54

INTRODUCTION



The world recently welcomed its 7 billionth human inhabitant, and sadly enough more than half of these people are living in poverty. Four billion poor struggle to get sufficient access to basic needs like food, water, healthcare and shelter. This group is referred to as the Base of the Pyramid, or BoP (Hart & Christensen, 2002; Prahalad, 2005).

Scholars and policymakers increasingly look at involvement of the private sector in the fight against poverty (Gradl & Knobloch, 2010; Kubzansky, Cooper, & Barbary, 2011). The private sector is believed to be able to contribute to poverty alleviation by developing products and services the poor desperately need, and by creating jobs and sources of income for people at the BoP. At the same time, it is believed that the private sector can profit from serving the poor through low margins and high volumes (Prahalad, 2005). BoP markets around the world represent a combined value of about 5 trillion dollar in purchasing power parity. 42% of the purchasing power of the population in Asia, resides in the 83% of the population that is part of the BoP, in Africa the BoP market represents 71% of the aggregate purchasing power of the region (World Resource Institute & International Finance Corporation, 2007). The BoP market potential is thus significant, and companies can do well by specifically targeting these markets (Anderson & Billou, 2007).

These claims have attracted businesses, both large and small, which have developed business models to engage with the poor. These are commonly referred to as inclusive business models (Gradl & Jenkins, 2011). Innovation in this context has been termed *inclusive innovation*. It refers to innovation processes that specifically address the needs of the BoP and involve the BoP not only as consumer, but also as producer, employee, and entrepreneur. The outcome of these processes are products and services that positively impact the lives of the poor, and/or offer access to livelihood opportunities for the poor.

The potential of inclusive innovation attracts governments, the private sector and not-for-profit organizations. Western governments increasingly tend to move away from bilateral aid and towards investing in private sector development in and for BoP markets. BoP markets are mostly found in the least developed countries, mainly in Africa and Asia, but also in Eastern Europe and Latin America. The environments in these countries often lack the

institutional, informational and infrastructural conditions required to make markets work (Gradl & Jenkins, 2011). Innovation is therefore hampered by the conditions found in these challenging environments. The difficulties in aligning innovation processes to BoP markets and environments prevent these innovations to reach sufficient scale to impact the BoP (Gradl & Jenkins, 2011).

It is in this context that specialized *innovation intermediaries* emerge. These intermediaries are organizations, or divisions of organizations, whose *raison d'être* is to enable others to innovate with and for the poor. These organizations can be large or small, and might operate within a single country, a group of countries, or across the globe. Examples of these organizations are the World Bank, the Global Research Alliance and the BoP Innovation Center (see box 3.1 for examples of such organizations).

These innovation intermediaries seek to develop interventions designed to fill the

institutional voids and overcome the barriers that are experienced by private enterprises in BoP markets. These challenges are too systemic to address through interventions on micro and meso level alone (Gradl & Jenkins, 2011; Altenburg, 2008). Innovation intermediaries must thus be active on the systemic or macro level, consequently, they operate primarily in the public, public-private, and not exclusively in the private domain (van Lente, Hekkert & Smits, 2008). Intermediaries are in a unique position because of their relatively impartial position (Klerkx & Leeuwis, 2008).

The growing body of BoP literature has so far primarily focused on individual products or services, presenting case- and meta-studies of inclusive business initiatives (Jenkins, Ishikawa, Geaneotes, Baptista, & Masuoka, 2011; International Finance Corporation, 2011), or has been oriented towards interventions at the micro or meso level, e.g. business incubators (Altenburg, 2008). These studies tend to underestimate the importance of basic institutions that make markets work, while it overestimates the capacities of States as main coordinator and implementor of interventions that promote innovation (Altenburg, 2008). As governments lack capacity, and private

companies may behave too opportunistic to operate at the systems level (Webb, 2010), this research focusses on innovation intermediaries as developer and implementor of interventions that aim to foster inclusive innovation.

Intermediaries have to consider the dynamics of the region in which they wish to support innovation, and design their interventions accordingly (Batterink, Wubben, Klerkx, & Omta, 2010). While the need for contextualised intermediation is recognized, a structural approach to come to context specific interventions has yet to be developed. To that end, this research introduces the notion of *Inclusive Innovation Systems*. Together with the Functions of Innovation Systems (FIS) approach (Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007; Wieczorek & Hekkert, 2012), it is presented as a framework for analysing the set of actors, institutions, and societal subsystems that contribute to the emergence of inclusive innovations. This research thus targets innovation intermediaries that wish to support inclusive innovation in a new to them country or sector, and which seek a way to identify opportunities for strengthening inclusive innovation systems. The research question that is being addressed is: *How can*

innovation intermediaries identify opportunities to strengthen inclusive innovation systems? These are thus opportunities to fill institutional voids and overcome the barriers experienced by actors or inclusive innovation systems.

The aim of this research is twofold: First, to develop a tool for assessing systemic gaps that can be addressed by intermediaries in order to strengthen inclusive innovation systems. Second, to evaluate its applicability by performing an analysis of the agro-food sector of Vietnam. This sector is chosen as it is present in all BoP markets, and because it is vital for the wellbeing of the poor. The setting of Vietnam is interesting as it is frequently hailed as one of the fastest growing economies in the world, yet poverty remains relatively widespread.

The study is presented in three sections: tool development, tool application, and tool evaluation. In the first section the study will be positioned within three different strands of literature: 1) the BoP concept and inclusive innovation; 2) innovation systems; and 3) innovation intermediaries. In doing so, some of the ambiguities that exist in terminology and definitions will be clarified. In chapter three the theoretical framework will be introduced.



The tool is then presented in chapter four, followed by a methodology section.

In the second section the tool is applied to the agro-food sector of Vietnam, this sector is first introduced in chapter 6, before chapters 7, 8 and 9 describe tool application.

In the first chapter of part three the application of the tool is evaluated, conclusions and directions for further research are put forward in the following chapter, and the final chapter presents a discussion on research findings and methodology.



DEVELOPMENT



LITERATURE REVIEW 2

The following chapter presents a review of the relevant literature across three different strands. First around the concepts of Base-of-the-Pyramid and inclusive innovation, then on the theory of innovation systems, and finally on innovation intermediaries. The literature review aims to contribute to the understanding of the different concepts involved, and inspires the theoretical framework that is presented in the chapter after.

The BoP concept and Inclusive Innovation:

The Base of the Pyramid

Prahalad and Hart first introduced the concept of the Bottom of the Pyramid as representing the billions of poor lowest at the economic pyramid in 2002 (Prahalad & Hart, 2002). In later works, scholars referred to it as *base* rather than *bottom* of the pyramid due to the negative connotation of the latter. Different definitions and inclusion criteria exist, and therefore different figures on the size of this group can be found. In Prahalad's most recent work it was defined as the 4 billion people who live of less than US \$ 2 per day (Prahalad, 2011).

The majority of the BoP is found in developing and emerging economies. They represent a combined market value of 5 trillion dollar in purchasing power parity (World Resource Institute & International Finance Corporation, 2007). This vast and fast growing market has traditionally been underserved. The BoP market potential and the fact that Western markets are increasingly becoming more saturated have attracted the attention of a growing number of businesses. Despite the very low margins on per-unit price that are realistic in this market, the sheer number of potential consumers makes doing business in these markets interesting (Gradl & Knobloch, 2010; London & Hart, 2004; Seelos & Mair, 2007). This has led to a wave of large multinationals developing products at margins that were not deemed to be profitable before. Such efforts however have been criticized (Dietrich, 2009; Hahn, 2008; Karnani, 2006, 2009). It is a

very unilateral approach to the poor, and where it has showed that it can be very profitable for the companies involved, it remains questionable whether the poor profit as well (Simanis & Hart, 2008).

Instead, companies should not only see the BoP as consumer, but also as a business partner (Simanis & Hart, 2008), whether it be as a producer, employee or entrepreneur. This has several consequences: First, entering BoP markets does not only provide the BoP with products they previously did not have access to, it also creates sources of income and spurs economic activity at the BoP. Second, it opens the door for co-creation, using the valuable insights of BoP people and BoP enterprises as input for innovation processes, (Simanis & Hart, 2008). And third, it allows the BoP to be a source of (radical) innovations (Prahalad, 2011).

Although BoP markets differ in cultural and geographical setting, available capabilities and consumer needs, there are several challenges to product and service development that are present in (nearly) all BoP markets, and therefore require specific attention. These can conveniently be summed up in the 4A's (Prahalad, 2011):

1. **Awareness:** As for any product or service, in any market, BoP consumers (or producers) need to be aware what is available and on offer, and how to use it. Creating awareness is complicated by the fact that many people at the BoP live in media-dark zones, are illiterate, and/or belong to small language groups;
2. **Accessibility:** Delivering products and services to and from people at



the BoP can be a challenge as many of them reside in remote rural, or crowded urban areas that lack proper infrastructure;

3. *Affordability*: Products and services need to be offered at extremely low prices, without compensating on quality. This allows for only the thinnest margins and does not permit expensive and long-term research and development trajectories, as it will be very difficult to recoup these investments later;
4. *Availability*: To build a loyal customer (and producer) base at the BoP, the supply (and uptake) of products and services needs to be uninterrupted. This is a challenging endeavour in markets that lack an established logistics infrastructure.

Developing products and services for the BoP thus comes with some prerequisites. Hence, the *space* in which products and services can be developed is limited. Prahalad (2005, 2011) terms this constrained space as the ‘innovation sandbox’. For each product or service that is to be developed, a specific innovation sandbox applies. In which besides the four A’s mentioned above, specific boundaries to the innovators space are defined, which can relate to specific cultural norms or local weather conditions.

Innovation is... something new

“Ever since the invention of innovation the number of definitions of innovation seems to grow even faster than the number of researchers and practitioners in innovation” (multiple sources).

Many practitioners go into ever more specific definitions, including typologies and distinctions from other concepts. A clarifying, simple and

easily understandable definition of innovation I found not in academic literature, but in a popular business guidebook by innovation expert Scott D. Anthony: “[Innovation is] something different that has impact” (Anthony, 2011, p. 16). The innovation target should be the one experiencing it as something new, or as Anthony states: “Innovation is in the eye of the beholder” (Anthony, 2011, p. 16). Impact refers to the measurable impact on someone’s life.

Innovation for the poor

Inclusive innovation is still a relatively new concept. It is difficult to trace it back to its origins, as it has not been introduced by scholars as a new concept or specific type of innovation. The term “inclusive” has been used in other settings like: inclusive business, inclusive growth, inclusive finance etc. Inclusivity means that it (also) addresses a group that is commonly excluded, referring to the poor, the disabled or otherwise socially excluded.

Inclusive innovation is used to refer to pro-poor innovation. Other terms that mean similar, but slightly different things are ‘frugal innovation’, ‘BoP-innovation’, or ‘Gandhian innovation’. Dutz (2007) refers to inclusive innovation as: “Knowledge creation and absorption efforts most relevant to the poor” (Dutz, 2007, p. 2). The work lacks a well-formulated definition of the concept, and puts emphasis on knowledge creation and knowledge transfer, without including a notion of impact.

Recently (June 2012), the Journal of Management Studies dedicated an issue to the concept of inclusive innovation. The editors (George, McGahan, & Prabhu, 2012) defined it as “the development and implementation of new ideas which aspire to create opportunities that enhance social and economic wellbeing for disenfranchised members of society” (p. 663).

The authors state it distinguishes “the process of inclusive innovation from its outcomes and acknowledge that aspiring to inclusivity is valuable even when opportunity is not ultimately realized” (George *et al.*, 2012 p. 664). This seems to be a step backward in the innovation debate, as it leaves impact out of the equation. A distinction between process and outcome adds to the understanding of the concept, yet both are essential ingredients.

In this study inclusive innovation refers to the innovation *processes* that specifically address the needs of the BoP and which involve the BoP not only as consumer, but also as producer, employee, and entrepreneur. The *outcomes* of these processes are high performance products, services and processes that combine awareness, accessibility, affordability and availability. Together these processes and outcomes have a positive impact on the BoP in a financially sustainable way. This impact is reached by making (better) products and services available to the BoP, and/or by providing them an improved source of income. In box 2.1 an examples of an inclusive innovation is given.

Innovation Systems

The term ‘innovation systems’ (IS) was first coined in the 1980’s and further developed in the decades after by scholars like Freeman (1995), Edquist (1999), Lundvall (1988) and Carlsson and Stankiewicz (1999). The main line of thought is that determinants of technological change are not only found in individual firms, but also in the societal structures that surround them (Suurs, 2009). An innovation system consists of actors and institutions, the relationships between them, and the infrastructure that supports it.

4 Elements: actors, institutions, interactions and infrastructure

Actors are the system components that are involved in innovation activities. Actors can for instance be companies, governmental bodies, or non-governmental organizations. The IS framework distinguishes institutions from organizations. *Institutions* are passive and can be regarded as the rules, regulations, routines and cultural norms that influence innovative activity of actors, and are in turn influenced by it (Carlsson & Stankiewicz, 1991; Carlsson, Jacobsson, Holmén, & Rickne, 2002; Edquist & Hommen, 1999; Markard & Truffer, 2008; Suurs, 2009). As Markard and Truffer state: “Actors

may thus be regarded as the players, and institutions as the rules of the game” (Markard & Truffer, 2008, p. 445). The term *interaction* is used to refer to the relations between system components. Interactions can be strong, weak or absent. Interactions are found on the level of individual actors and on the level of networks. And finally the innovation system is supported by an *infrastructure*.

Some of the benefits of the IS framework are firstly that it does not regard technological change as exogenous, it rather places the innovation process at the heart of what is being studied (Johnson, Edquist, & Lundvall, 2003). Secondly, it is a holistic approach, encompassing not only economic but also political and social determinants. And thirdly, it emphasizes interdependency and non-linearity (Carlsson *et al.*, 2002). The performance of an innovation system is not a linear function of its elements, but rather the product of the numerous relations between its elements (Suurs, 2009; van Lente, Hekkert, & Smits, 2003). In the ‘old’, linear view of innovation, innovation was often confused with research and knowledge development, and measured in scientific and technical outputs. The IS framework emphasises that innovation is



neither research nor science and technology, but rather the application of knowledge to achieve desired social and/or economic outcomes (Hall, 2005).

National, sectoral and technological innovation systems

Scholars have developed different ideas of innovation systems. The type of innovation system defines the boundaries of the system, and the type of innovations under study. The narrower the definition, the more restricted the focus becomes to the institutions and actors that are directly relevant to innovation (AU-NEPAD, 2010). Perhaps the most widely used type of innovation system is the National System of Innovation. First coined by Freeman in 1982, it builds on the work of Friedrich List in the late 19th century (Freeman, 1995). It is used by organizations like the OECD, European Union, UNIDO and AU-NEPAD for policymaking and between-country analysis (B. Johnson et al., 2003). Its boundaries are geographically determined, and the approach has a strong focus on formal institutions and the role of governments (B. Johnson et al., 2003). Other geographically defined systems may be local, regional or supranational (B. Johnson et al., 2003).

An IS can also be 'sectorally' defined. The boundaries of these systems are not geographical, but are related to a specific product or group of products with a similar function; a specific technology; or a particular industry (Bo Carlsson et al., 2002; B. Johnson et al., 2003). For instance 'sectoral innovation systems' (Breschi and Malerba, 1997), or 'technological systems' (Carlsson & Stankiewicz, 1991).

A technological innovation system (TIS) is defined as "a combination of interrelated sectors and firms, a set of institutions and regulations

characterizing the rules of behaviour and the knowledge infrastructure connected to it" (Hekkert et al., 2007, p. 416) all revolving around a specified technology. As actors relevant to a technology connect across industries and across borders, there is typically no geographical delineation.

Functions of Innovation Systems (FIS)

In more recent literature, specific attention has been given to 'functions' of innovation systems (Hekkert et al., 2007; Suurs, 2009). The idea behind this approach is that the system is considered to have a purpose, and that this purpose can be served through the fulfilment of a set of functions (Bergek, 2002). The single-most important purpose of an innovation system is to induce innovation processes (Suurs, 2009). All activities that contribute to the creation and diffusion of innovation are considered system functions (Hekkert et al., 2007; Suurs, 2009). System functions can be understood as types or sets of activities that contribute to the overall innovation process of a system (Suurs, 2009). The performance, or functioning of the system, can then be expressed in how well the individual functions have been fulfilled (A. Johnson, 2001).

Different scholars have defined different lists of functions in different kind of systems (Bergek, 2002; Carlsson and Jacobsson, 2004; Edquist, 2004; Hekkert et al., 2007). Yet in essence, these lists vary very little. In this study, the functional framework of Hekkert *et al.* (2007) is chosen, as it has been well-developed in consecutive works (Alphen, Hekkert, & Sark, 2008; Suurs, 2009; Wiecezorek, Hekkert, & Smits, 2010; Hekkert, de Boer, & Eveleens, 2011; Wiecezorek & Hekkert, 2012). It lists seven functions:

- F1: Entrepreneurial activities
- F2: Knowledge development
- F3: Knowledge dissemination

- F4: Guidance of search
- F5: Market formation
- F6: Resource mobilisation
- F7: Creation of Legitimacy

What these functions constitute, and what their role is in this research is discussed in chapter three.

Intermediaries in the IS framework

The IS framework stresses the importance of interactions between different actors, hence the organizations that fulfil an intermediary or bridging role and thus strengthen the interactions within innovation systems are considered a crucial ingredient in any system of innovation (van Lente et al., 2003). Researchers studying national, regional, or sectoral systems of innovation often make reference to intermediaries, yet they typically do not define them. A literature review on intermediaries is presented below to resolve this issue.

Innovation Intermediaries

Innovation is believed to occur in networks of heterogeneous actors (Howells, 2006). The growing conviction of this idea, and the belief that systemic support is therefore needed, has led to a new breed of intermediaries, described as *innovation intermediaries* (Kilelu,

Klerkx, & Leeuwis, 2011). Several authors have recognized the emergence of this new type of intermediaries (Howells, 2006; Klerkx & Leeuwis, 2008; van Lente, Hekkert, & Smits, 2003). This 'new type' (van Lente et al., 2003) operates at system level, in contrast to the old type of intermediaries that focused on bilateral relations in the form of knowledge transfer, and support of individual organizations, for instance legal or organizational consultancy (van Lente et al., 2003).

Several authors stated that theory on this type of intermediary has been lacking, and that literature is fragmented and non-cumulative in nature (Dalziel, 2010; Howells, 2006; Klerkx & Leeuwis, 2009). This is apparent from the diverse and sometimes conflicting terminology, typology and definitions. Frequently used terms are brokers, bridging organizations, boundary organizations, third parties, information intermediaries, and knowledge brokers.

What intermediaries are

Howells (2006) defines an *innovation intermediary* as an "organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties" (Howells 2006, p 720). The emphasis in

this definition is on the innovation intermediary as a party that brings other parties together. The same is also true for the definition of Klerkx and Gildemacher (2012), when they talk on *innovation brokers*: "Innovation brokers are persons or organizations that from a relatively impartial third party position purposefully catalyse innovation through bringing together actors and facilitating their interaction" (Klerkx & Gildemacher, 2012, p. 221). *Systemic intermediaries* (Klerkx & Leeuwis, 2009) or systemic instruments (Smits & Kuhlmann, 2004) are also terms that are used to refer to intermediation on a higher systemic level.

In this research the term innovation intermediary is preferred over systemic intermediary or innovation broker, as these organizations do not exclusively operate at the systems level, but also on micro and meso level. And 'intermediary' is preferred over 'broker', as a broker can be regarded as a party that functions as a strategic go-between, who benefits from the cognitive or geographic distance between two or more parties.

Where Howells (2006) and Klerkx (2012) define intermediaries and brokers by the activities they perform, other authors choose



to define them by their purpose. Dalziel (2010) defines innovation intermediaries as “organizations or groups within organizations that work to enable innovation, either directly by enabling the innovativeness of one or more firms, or indirectly by enhancing the innovative capacity of regions, nations, or sectors” (Dalziel p 3, 2010). Or as Winch and Courtney (2007) state: “[...] enabling other organizations to innovate” (Winch & Courtney, 2007, p 751).

Why intermediaries exist

Several authors have stressed the importance of intermediaries for innovation performance (Batterink, Wubben, Klerkx, & Omta, 2010; Dalziel, 2010; Klerkx & Leeuwis, 2009). Especially small and medium enterprises (SMEs) are said to often lack sufficient resources for innovation on their own, they need to operate within networks, but struggle to profit from them (Batterink et al., 2010). Intermediaries play a vital role in building and maintaining networks, and enabling SMEs to make efficient use from these networks. Intermediaries contribute to reducing uncertainties in the early stages of innovation, where the high risk would otherwise stop firms from investing in innovation (Klerkx & Leeuwis, 2009). In developing countries intermediaries play an important role in economic development through stimulating and supporting entrepreneurship, and facilitating technology catch-up (Dalziel, 2010).

What intermediaries do

The literature on intermediaries pays significant attention to what kind of activities intermediaries perform. Batterink et al. (2010) define three categories:

- Demand articulation (van Lente et al. call this ‘articulation of options and demand’).

- Network composition (van Lente et al. refer to this category as ‘alignment of actors and possibilities’, Klerkx and Leeuwis as ‘network brokerage’).
- Innovation process management (van Lente et al. categorize this as ‘support of learning processes’).

Kolodny et al. (2001) proposed a list of ‘design requirements’ for technology extension organizations. Klerkx et al. (2008a, 2008b, 2009) and Batterink et al. (2010) used this same list as design requirements for intermediaries. The list constitutes six points:

- Visibility and accessibility to SMEs
- Trustworthiness to SMEs
- Access to appropriate sources of knowledge and information relevant to the innovation processes
- Credibility of the intermediary organization with these sources
- Quick response to the requests of SMEs
- Complementarity to the weaknesses of the SMEs it serves

Both Kolodny et al. and Klerkx et al. focused on intermediaries serving SMEs. It can however be argued that innovation intermediaries serve not only SMEs, but serve a system. The design requirements should therefore be translated to better fit this systemic character. This specifically has implications for the last design requirement: ‘*Complementarity to the weaknesses of the SMEs it serves*’. This logically becomes: ‘*Complementarity to the weakness of the innovation system it serves*’. This means as much as that the activities of intermediaries are context specific, context specificity is stressed by several authors (Batterink et al., 2010; Kilelu et al., 2011; Klerkx & Gildemacher, 2012; van Lente et al., 2003; Tödtling and Trippl, 2005). Since interventions need to be context-specific, scholars have been

reluctant in making prescriptions or blueprints for intermediaries.

A recent article by Klerkx and Gildemacher (2012) is one of few articles that come to specific recommendations for intermediaries; in contrast, most articles do arrive at recommendation for policymakers, but not for intermediaries. They state that countries and sectors have different cultures of collaboration and different stages of innovation system development, and that intermediaries need to take the corresponding system imperfections into account. The first recommendation they make is to perform a context analysis prior to or as part of intermediation activities. They do not however make clear how such an analysis can or should be made.

Box 2.1 - Example of inclusive innovation

M-Pesa

M-Pesa is a highly successful mobile phone based banking and money transfer service. The service was launched in Kenya in 2007, in 2012 it has 17 million M-Pesa accounts in Kenya, as well as millions of subscriptions in Tanzania, Afghanistan and South-Africa among others.

The poor, who previously did not have bank accounts, now have the opportunity to transfer money to distant relatives, while also reducing the risks associated with handling cash. Apart from providing new services to the poor, it also generates numerous job opportunities, as nearly 20.000 retailers are active as M-Pesa agents in Kenya alone.

In this study the functions of innovation systems approach is proposed to be used as such a tool. A reference to the functions of innovation systems as defined by Hekkert *et al.* (2007) is made by Klerkx (2009): “[innovation intermediaries] contribute to several systems functions that Hekkert *et al.* defined, most notably the functions of knowledge diffusion through networks [F3], guidance of search [F4], resource mobilization [F6], and creation of legitimacy/counteract resistance to change [F7]” (p. 852). Although it is more likely that intermediaries contribute more to certain functions than to others, yet as a tool for analysis no function should be overlooked. The functions of innovation systems interact and should therefore not be studied in isolation. And as we are specifically interested in the role of intermediaries in BoP context we should add to that that due to the prevalence of less capable and less resourceful governments, intermediaries can and should play a bigger role in strengthening the entire innovation system (Dalziel, 2010), and not focus only on specific functions.



THEORETICAL FRAMEWORK

3



In the previous chapter the notions of inclusive innovation, innovation systems and innovation intermediaries have been explored. The following chapter builds on these strands of literature by introducing the concept of *Inclusive Innovation Systems*. First a quick recap is presented that aims to clarify what kind of organization is referred to when one speaks of innovation intermediaries in BoP context, this is further illustrated with two examples of such organizations. This chapter also provides a description of each of the seven functions of innovation systems, with specific emphasis on the differences that can be expected compared to conventional innovation systems.

Innovation intermediaries in inclusive innovation systems

Building and maintaining networks is an important activity of intermediaries, but this activity should not be over-emphasized by including it in its definition. Furthermore, innovation intermediaries do more than bridging alone, they also engage in one-on-one support to a whole range of actors including SMEs, multi-national companies (MNCs), farmer unions and governmental bodies. Innovation intermediaries are therefore defined as organizations that enable others to innovate, both directly by enabling the innovativeness of one or more firms, as well as indirectly by enhancing the innovative capacity of regions, nations, or sectors.

Innovation intermediaries aim to strengthen innovation systems. An innovation system consists of a set of heterogeneous actors. They

interact with each other and their surroundings. The behaviour and interactions of actors within the system are bounded by *institutions*, which can be regarded as the 'rules of the game'. The system is supported by an *infrastructure*.

Innovation intermediaries operate (partly) at the systems level. Consequently, such organizations are found in the public, public-private and not exclusively in the private domain.

This research focuses on inclusive innovations, these are the innovation processes that specifically target the poor, and have a positive impact on the lives of people at the BoP. To emphasise the distinct features of pro-poor innovation processes and the innovation systems in which they are developed, this research introduces the notion of *Inclusive Innovation Systems* (IIS).

An IIS is described as the combined set of actors, interactions, institutions and infrastructure that are involved in the development and diffusion of inclusive innovations. An IIS can span a specific product or service, a product or service group, a (sub)-sector, region or country. By definition, the wellbeing of the poor is served by strong IIS performance.

In an IIS, innovation intermediaries have as their primary objective to strengthen the innovation system in order to facilitate inclusive innovation, and thus contribute to impact on the BoP through creating sources of income and extending product and service offerings to BoP consumers. To further illustrate what such organizations look like, examples are given in box 3.1.

In this research the use of functions of innovation systems is proposed as a way

to analyse inclusive innovation systems, with a view to come to recommendations for the design of interventions by intermediaries. The set of functions is derived from the work of Hekkert *et al.* (2007) on technological innovation systems. These functions have been developed for the assessment of technological innovation systems, thus focussing on a single product or technology. It has frequently been applied for the analysis of transitions towards sustainable modes of production. In this research the functions are proposed to be used on sector level rather than on a single product or technology. The approach is considered to be useful for sector level analysis as well, Bergek (2002) suggests that system functions are key determinants of innovative performance, not just for TISs, but for innovation systems in general. The TIS and FIS approach may have been developed in the Western context, it is believed that the principles of innovation are equally relevant in the context of inclusive innovation, even if there are important empirical differences that have methodological consequences (George *et al.*, 2012). The set of functions from Hekkert *et al.* (2007) is chosen as it is well developed in consecutive work, and is most familiar to the researcher.

The following part briefly discusses what each function entails, for a more detailed description I refer to the work of Hekkert *et al.* (2007), or Suurs (2009). In each description specific emphasis is put on the differences that can be expected in Inclusive Innovation Systems compared to conventional innovation systems, these are based on systems research performed in developing context and the BoP literature (AU-NEPAD, 2010; Arocena & Sutz, 2005; Gradl & Jenkins, 2011; Intarakumnerd, Chairatana, & Tangchitpiboon, 2002; Spielman, 2005).

The Functions of Inclusive Innovation Systems

FI: Entrepreneurial activity:

The entrepreneur is the vital link who turns potential into action. Entrepreneurs can be incumbent firms, new entrants, or sole proprietors. Their experiments provide the diversity that is a prerequisite for selection. Entrepreneurial activity can be regarded as the result of the other functions. A well functioning innovation system offers opportunities and the human and financial resources that are necessary to pursue these opportunities. Entrepreneurial activity is thus a first indication for system functioning (Hekkert *et al.*, 2007).

Inclusive Innovation Systems typically involve a large informal private sector. Many of the entrepreneurs in these systems are small traders, shopkeepers or farmers. Many of these are entrepreneurs out of necessity, rather than out of opportunity. Whereas in Western markets single entrepreneurs are usually associated with creative, driven, risk-taking individuals, entrepreneurs in developing countries would often prefer to work for an establishment if possible (Christensen, Parsons, & Fairbourne, 2010). Still, BoP entrepreneurs can be creative and resilient, using constraints as a source of inspiration (Jenkins *et al.*, 2011; Viswanathan & Sridharan, 2009).

Many developing countries put a heavy bureaucratic burden on companies and start-ups, preventing businesses to develop in or move to the formal sector; this is also clear from IFC's Ease of Doing Business reports that are published on an annual basis. People that become entrepreneurs out of necessity therefore tend to move to traditional activities with low entry barriers, this translates in over-supply, fierce price competition and very



low profits (Altenburg, 2008).

F2: Knowledge development:

This function describes the processes of knowledge development and learning. It can take place within companies, networks, specialised knowledge institutes or individuals. Knowledge can be developed through formal R&D activities, public research or less formal and less specialized activities. Indicators that are often used to describe knowledge development are 1) R&D projects, 2) patents, and 3) investments in R&D (Hekkert et al., 2007).

In the 'old', more linear view of innovation, knowledge development played a central part. It is still seen as a vital part, but nowadays there is more attention for how knowledge is being put to use. Many governments, as have the donor organizations that supported them, have focused on innovation system structure. In many developing countries you will find an innovation system *structure* that looks well developed. There are often many knowledge institutes in place, especially in the area of agriculture. Thus while the innovation system in terms of structure looks good on paper, many of these institutions are understaffed, under resourced and generally bring the country very little. This observation is a strong plea for a functional analysis of innovation systems, as analysis based on system structure alone could provide too optimistic of an image.

The indicators that are often used in Western innovation systems (patents, publications, R&D expenditure) will be of little use in most developing countries, as the institutions around property rights are typically underdeveloped, and experimentation often takes place in less formal circumstances than is usually the case in Western economies. The bulk

of the knowledge development in developing countries is carried out by, or on behalf of, or under licensing agreement with leading Western companies (Altenburg, 2008).

F3: Knowledge dissemination:

Knowledge is of value when it is applied, knowledge that has been developed therefore needs to flow through the system, from producers of knowledge to users of knowledge. This function (F3) expresses how well this flow is established. In innovation systems of developing countries, the infrastructure is generally less well developed. Knowledge is therefore typically less mobile. In inclusive innovation systems illiteracy rates are typically high, and access to sources of information and knowledge such as newspapers, magazines, television and Internet low. On the other hand, the strong informal social ties that are found within and between BoP communities have proven to be very effective in the dissemination of knowledge and information, yet their effectiveness is much harder to control and measure.

F4: Guidance of search:

As resources are almost always limited, it is important to choose directions for further investments (Hekkert et al., 2007). Without guidance, innovative efforts will be dispersed and less cumulative.

Resources are even more of a constraint in Inclusive Innovation Systems. This function should therefore not be overlooked. The lack of long-term vision that is often found in developing countries however, could well hamper this function. Guidance must be provided in such a way that innovative efforts contribute to increasing the percentage of workforce and enterprises involved (Tilman, 2008).

F5: Market formation:

Function five describes how governments can create protected spaces in which new technologies and products can be introduced, without having to compete head to head with incumbent technologies that have had time

to eliminate inefficiencies and reach economies of scale. This can be done by creating (temporary) niche markets, or by providing favourable tax/subsidy regimes for new/desirable technologies.

Inclusive innovation systems are characterized by large informal sectors,

Box 3.1 - Examples of innovation intermediaries

BoP Innovation Center

The BoP Innovation Center (BoPInc) is a Dutch independent non-profit foundation that was established in 2010. It aims to develop, learn about, and accelerate innovative strategies to create a positive impact on the lives of the poor.

It is one of the preferred partners of the Dutch Ministry of Foreign Affairs, and also has partnerships with organizations like Rabobank, Friesland Campina, DSM and SNV among others.

Firms that wish to develop business strategies for the BoP approach the BoP Innovation Center. At the same time, BoPInc captures and shares lessons learned about market-based inclusive innovations.

BoPInc is a typical innovation intermediary in the realm of inclusive innovation. It leverages financial and human resources from a heterogeneous network of knowledgeable partners to create impact for the BoP, both through one-on-one support, as well as through systemic-wide instruments that aim to create vibrant SME sectors.

Global Research Alliance

The Global Research Alliance, or GRA, is a virtual alliance of nine world leading applied research agencies. Among these are TNO (the Netherlands), Fraunhofer-Gesellschaft (Germany), and CSIR India. The GRA unites skills, expertise and resources across virtually all fields of scientific endeavour to address large-scale issues facing developing countries.

Some of the expertise areas on which it aims to leverage the knowledge of its members are innovation systems, inclusive innovation, and BoP-methodologies.

The GRA is an innovation intermediary because it tries to enhance the innovative capacity of nations, regions and communities by mobilising the knowledge that is available in its network, and to bring together producers and users of knowledge to co-create solutions.



on which the government can exert little control. The strong presence of donor organizations in some inclusive innovation systems can also contribute to market formation by (partly) subsidizing the development or procurement of certain products (e.g. fertilizer, tablets for water treatment, etc.). In some developing countries there have been examples of governments that embark on ambitious journeys to stimulate high-technological and prestigious sectors, like the automotive industry in Malaysia, and space programs in India and China. These projects can be a heavy burden on government expenses, while the trickling down effect, if any, only reaches a small elite (Altenburg, 2008). In stimulating and forming markets, distributional effects must be taken into account.

F6: Resource mobilization

This function describes the financial and human resources that are available to the innovation system. Inclusive innovation systems are generally less endowed with both human and financial resources. Negative trade balances are common in developing countries, inclusive innovation systems therefore often depend on large foreign loans from organizations as the World Bank or IMF.

The state of human resources is not as easily put in numbers as in most Western innovation systems. Where the level of education might be a good indicator in Western context, in an IIS access to education is limited, and numbers on education and employment only originate from the formal part of the economy.

At the same time, the BoP literature recognizes resource constraints as an important driver for ingenuity (Prahalad, 2005; George, McGahan & Prabhu, 2012). Less can therefore be more, assessment of this function should therefore not go past the ability to access and make use of resources.

F7: Creation of legitimacy

When something new is replacing something old ('creative destruction'), there can be resistance from parties that have vested interests. In this case, advocacy coalitions can lobby to take that resistance away, and to legitimize investing resources in the new development. In inclusive innovation systems the level of organization among actors is often low, and the influence of such lobby groups, if they exist, is limited.



TOOL DEVELOPMENT

4

The following chapter starts off by quickly reviewing the methods for functional analyses that have been used by other scholars. Then a tool is presented, which is a five-step plan that starts by defining system boundaries, and is concluded by formulating recommendations for intermediaries. This chapter presents the 'what' of each step, the 'how' is elaborated upon in the methodology chapter, which follows straight after.

Hekkert *et al.* (2007) have proposed a methodology for analysing the functioning of innovation systems, in this methodology an extensive event analysis is used. These events can be identified from newspaper archives and professional journals (Hekkert *et al.*, 2007). It remains debatable how suitable this approach is when applied to innovation systems in less-developed countries, because data is generally not as readily available, independent, and reliable.

A more hands-on and accessible method to analyse system functioning was proposed by Wieczorek *et al.* (2012). Furthermore, it couples a functional analysis with a structural analysis. The rationale of this coupled analysis is that functions cannot be influenced without altering a structural element (Wieczorek, 2012). For the use of this method by policymakers, Wieczorek *et al.* (2012) propose a qualitative analysis and scoring method, in which for each function the outcomes are

directly linked to systemic goals that are based on the work of Smits and Kuhlman (2004). This approach is however not appropriate for intermediaries in inclusive innovation systems: the way functions are scored and analysed does not leave room for rich qualitative data that describes the context. It rather arrives at one or several out of a possible eight predefined broad systemic goals for each function. This is specifically a shortcoming in weak innovation systems, where it would lead to an identical list of generic systemic goals for each function, e.g.: "*stimulate and organise participation of relevant actors*" or "*stimulate occurrence of interactions*". While these systemic goals are justifiable as such, they do not contribute to context-specificity, nor do they provide the intermediary any other guidance for the design and deployment of interventions.

For the purpose of identifying opportunities for intermediary interventions, the functions approach should be used in such a way that

rich qualitative data is gathered and retained. The seven functions can be used as a *guide* in gathering and processing the data, rather than gathering data to *score* systemic functions. In this research a tool is presented that builds upon the work of Hekkert *et al.* (2007) and Wieczorek *et al.* (2012), it is to be used by innovation intermediaries who wish to bring about inclusive innovation, therefore the theoretic notion of inclusive innovation systems is incorporated in the tool design. Below a short description is given of *what* this tool constitutes, in the methodology section it is described *how* this tool is applied.

Figure 4.1 shows the general outline of the tool.

A. Define system boundaries:

A particular IIS can be defined around a single product or service (e.g. domestic biogas plant), a group of products fulfilling a particular function (e.g. cook stoves), a sector (e.g.

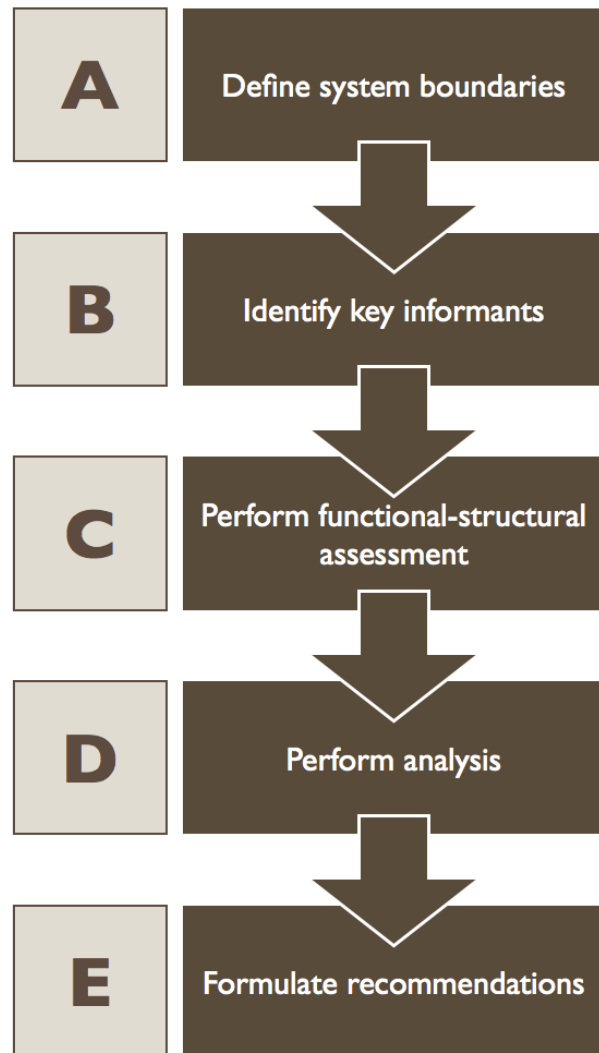


Figure 4.1 - General outline of the tool

agriculture), or sub-sector (e.g. horticulture). Boundaries can then be set by selecting a specific target group (e.g. rural households) or a specific geographic region (e.g. Vietnam) to make sure that across the IIS institutions that matter to the innovation under study are more or less homogeneous. Cultural norms in Kenya can for instance be very different from cultural norms in Nepal, thus even though it is the same technology, and perhaps even the same actors, the institutions that influence the innovation process are very different, and should thus be regarded as a different IIS. It can however also be that the institutions that matter are similar for specific target groups in different geographic regions, for instance the position of women in Somalia can be similar to that of women in Indonesia, an IIS can then be defined by target group (e.g. women in Islamic countries).

Who's in, who's out?

In are all those actors that are active in the development and diffusion of a specific product, product-group or within a certain sector, thereby specifically (not exclusively) addressing the needs of the poor. The geographic boundaries are defined not in the strict sense that all actors need to be present within these specified borders, yet their activities do need to target the poor within the geographically defined area. It therefore for instance does include the Dutch firm that is developing a new milling technology specifically for the poor, but it does not include the firm that builds general components, as its innovative activity does not specifically targets the poor. That is not to say that this actor does not interact with actors within the system, and through that interaction they can even influence the system (e.g. through an increase or decrease in prices of certain components), however this is regarded as an influence exogenous to the system.

B. Identify key informants:

Key informants need to be identified which can serve as a source for information. This group should be heterogeneous, and could include among others representatives of governments, private enterprises, NGOs and knowledge institutes. A key informant is not necessarily a key actor, i.e. key informants are not necessarily the biggest influencers. It is vital to get insights from BoP consumers, producers and small businesses as well. Valuable insights can also originate from informants that are not directly involved in the system, but do have a good overview on system dynamics, e.g.: international NGO representatives.

C. Perform coupled functional-structural assessment:

The performance of a system is analysed best through a coupled functional and structural assessment, as functions can only be improved by altering one or several of the structural elements. Each function is assessed from the perspective of each structural element, i.e.: actors, institutions, interactions and infrastructure. The focus is actor-oriented, as it is assumed that interventions that follow from such an analysis come closer to the *perceived* reality of these actors, and are therefore more likely to be accepted.

D. Perform analysis:

In the analysis explanatory reasons are brought forward for insufficient functioning of the system. It should present a clear overview of the most pressing problems that hamper innovation in the IIS under study. It focuses on the issues that transcend particular functions, and on the interactions between them.

E. Formulate recommendations:

Recommendations should be formulated in such a way that they direct intermediaries towards the most pressing issues that hamper inclusive innovation, and inform them on the context in which interventions to tackle these issues need to be developed.

METHODOLOGY

5



This research seeks to evaluate the applicability of the tool that is based on the Functions of Innovation Systems (FIS) approach as an instrument to analyse strengths and weaknesses of Inclusive Innovation Systems. This analysis can be used to arrive at recommendations for innovation intermediaries that wish to promote inclusive innovation. The evaluation is carried out by means of case study research, in which the tool is applied to the agro-food sector of Vietnam. This chapter first presents grounds for case study research and case selection, and then focuses on how data is collected and analysed as part of tool application. This chapter concludes by going into how tool application is evaluated.

Case study research

Case studies have strengths and weaknesses, which I will not discuss in full length here; it suffices to state why the case study method is appropriate for the particular objective of this research. This research has both explorative and evaluative aspects. The research itself is mostly explorative, as the notions of inclusive innovation and inclusive innovation systems have so far received little or no attention from academia, this study aims to contribute to the understanding of these notions and how intermediaries can contribute to inclusive innovation. The case study however is evaluative, in the sense that it tests the applicability of the FIS approach in a new context.

The case study will follow a single-case design. The choice for a single-case design over a multiple-case design follows two rationales. First, the size and nature of inclusive innovation systems, or that of any innovation system, means that due diligence is required for its study; within the allotted timeframe for this study, it was therefore not feasible to conduct multiple case studies to the required standard. It was therefore a conscious choice to opt for quality over quantity. Second, although each inclusive innovation system is unique, a single application of the tool can expose some of the strengths and weaknesses of this tool, and provide directions for further

tool development and adaptation. It is deemed more efficient and valuable to discuss tool application and opportunities for improvement prior to further testing and deployment.

Case selection

The case that is being studied is the application of the FIS-based tool to the agro-food sector of Vietnam. The agro-food sector is chosen because it is a sector that is present in all BoP markets, it traditionally offers employment to a large portion of the BoP population, and its functioning is vital for the wellbeing of the poor. The setting of Vietnam is chosen because it is a country that has proven to be one of the fastest growing economies in Asia, yet the benefits of this economic growth do not sufficiently trickle down to those who need it most. To impact the lives of people at the BoP, a different kind of growth is needed. It is argued that inclusive innovation can provide this kind of growth. To further delimit the scope of this research, a specific interest is taken in the potato sector. It is expected that many of the findings will be generalizable to the entire Vietnamese agro-food sector level, the demarcation is merely a theme to guide search efforts. A comprehensive introduction to the case study is presented in the next chapter.

Tool application

The tool is applied to the agro-food sector of Vietnam. The *system boundaries* (A) are thus defined by sector, i.e. agro-food, and by geographic region, i.e. Vietnam. The first *key informants* (B) were identified through contacts from two intermediary organizations (the BoP Innovation Center, Utrecht, The Netherlands; and the Global Research Alliance, Melbourne, Australia). From there a snowballing method was used to identify a total of 21 informants which were interviewed. Other informants contributed by providing information that was captured in documents, or, in the case of farmers, through two farmer group discussions (see box 5.1). The group of informants incorporated representatives from local and central government(s), domestic and multinational private sector actors, NGOs, BoP producers, knowledge institutes, universities, extension services, and private and public intermediaries (See annex A for a list of sources). The *assessment* (C) took place within a timeframe of two months, in which considerable time was spent in Hanoi, Hưng Yên province, Hải Dương province and Đà Lạt region in Vietnam. The interviews were in the form of guided conversations rather than structured queries. The checklist that guided these interviews can be found in annex A. For reliability of data collection and analysis, interviews were recorded and reports of interviews were made straight after the interviews had taken place. Statements from the interviews and the farmer group discussions, and those that were found within additional documents were allocated to the seven functions. The combined statements and observations resulted in rich qualitative descriptions of each function, these descriptions are found in chapter seven. The *analysis* (D) is based on these descriptions, and summarizes the most pressing issues and their causes. Specific attention is given in the underlying relations between issues and across functions. And finally,

recommendations (E) are formulated that are supposed to tackle some of these most pressing issues, with specific consideration of the context in which they are deployed.

Tool Evaluation

The entire tool application is evaluated in the third and final section. This evaluation will be based on the experiences of the researcher. The researcher is employed by an innovation intermediary, and is thus familiar with the needs, ways of working, and capabilities of this particular organization. Furthermore, two other organizations that are involved in intermediary activities have been approached for expert insights. Judgements will be made on to what extent the tool proved to be a workable and logical way to analyse this particular inclusive innovation system, and whether the information that comes from the use of this tool is valued by potential users of the tool. Suggestions will be made on what could be done to improve the tool.

Improvements are specifically sought in making the tool more specific to the context of inclusive innovation systems. As it is the first application of the tool in this context, the functions are used in a relatively generic sense. By analysing *ex post* what kind of data is relevant for providing a clear picture of the IIS, it is possible to determine which topics *ex ante* should have been on the checklist. In other words, if one has the answer, it is easier to determine the question.

In doing so, this will build on the work of Hekkert *et al.* (2010) and Wieczorek *et al.* (2012) who proposed a set of diagnostic questions. These questions were used as a source of inspiration for the checklist that was



used to guide the interviews. However, as these diagnostic questions were developed for the purpose of function evaluation by policymakers in Western technological innovation systems, these questions are not necessarily appropriate in the setting of inclusive innovation systems.

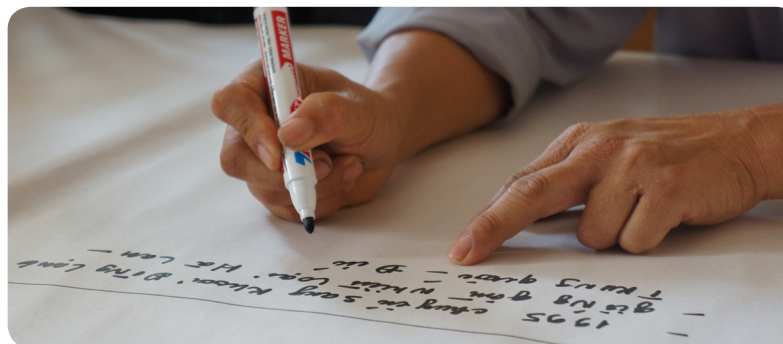
The concluding section on tool evaluation will therefore present a first attempt to make the tool more IIS specific by listing indicators for each of the seven functions, some of which will be specific for the purpose of the assessment of inclusive innovation systems.

Box 5.1 - Farmer group discussions

Farmer Group Discussions

Two farmer group discussions (FGD) were held to ensure the perspectives from this important group were incorporated. An expert from the Hanoi University of Agriculture facilitated these FGDs. Groups of six to eight potato farmers were invited to join the discussion which took place in community centres close to their respective communes.

They were asked to draw timelines and map the changes in farming practices, market prices, institutional changes and other relevant changes. They were then asked about where these changes came from and what kind of consequences these changes had. They were further interviewed about individual or organized experimentation, household situations, trainings they had received, and future perspectives. The group discussions were captured by the participants themselves on large sheets of paper, and later translated in English. The two groups proved to be very knowledgeable and highly motivated to bring results on the table. The pictures provide an impression of these FGDs.



APPLICATION

INTRODUCING THE CASE STUDY

FUNCTIONAL-STRUCTURAL ASSESSMENT

ANALYSIS

RECOMMENDATIONS





INTRODUCING THE CASE STUDY

6

The case study that is presented here is the application of the tool to the Vietnamese agro-food sector. The aim is to identify issues that prevent or hamper innovative efforts. To guide these search efforts, specific interest is taken in the potato-sector. The following chapter provides some general background information on Vietnam and the agro-food sector.

Country and population

Vietnam is a country in South-East Asia bordering Cambodia, Laos and China. With 333.210 km² it is about the size of Germany. It has a population of 87.840.00 (World Bank, 2011) people, which makes it the thirteenth most populated country in the world. 85% of the population belongs to the *Kinh*, or Viet, ethnic group, and there are 54 ethnic minority groups that make up the rest of the population. Most people in Vietnam relate to Buddhism, but few are practising Buddhists. Religion does not play a major role in day-to-day life.

Economy

Vietnam is one of the fastest developing countries in the world with an annual growth rate between 5% and 10% over the last two decades. Growth has been strongest in the industry and services sectors, which now both account for nearly 40% of value added GDP. Vietnam struggles to keep its inflation rate under control, as it hit 11.8% in 2010, and a

soaring 20.9% in 2011 (World Bank, 2011). Economic growth in Vietnam caused that it is becoming an increasingly important market, which also results in increasing foreign interest. It is also increasing in importance as a producer, exporting manufacturing goods, information technology and high-tech products.

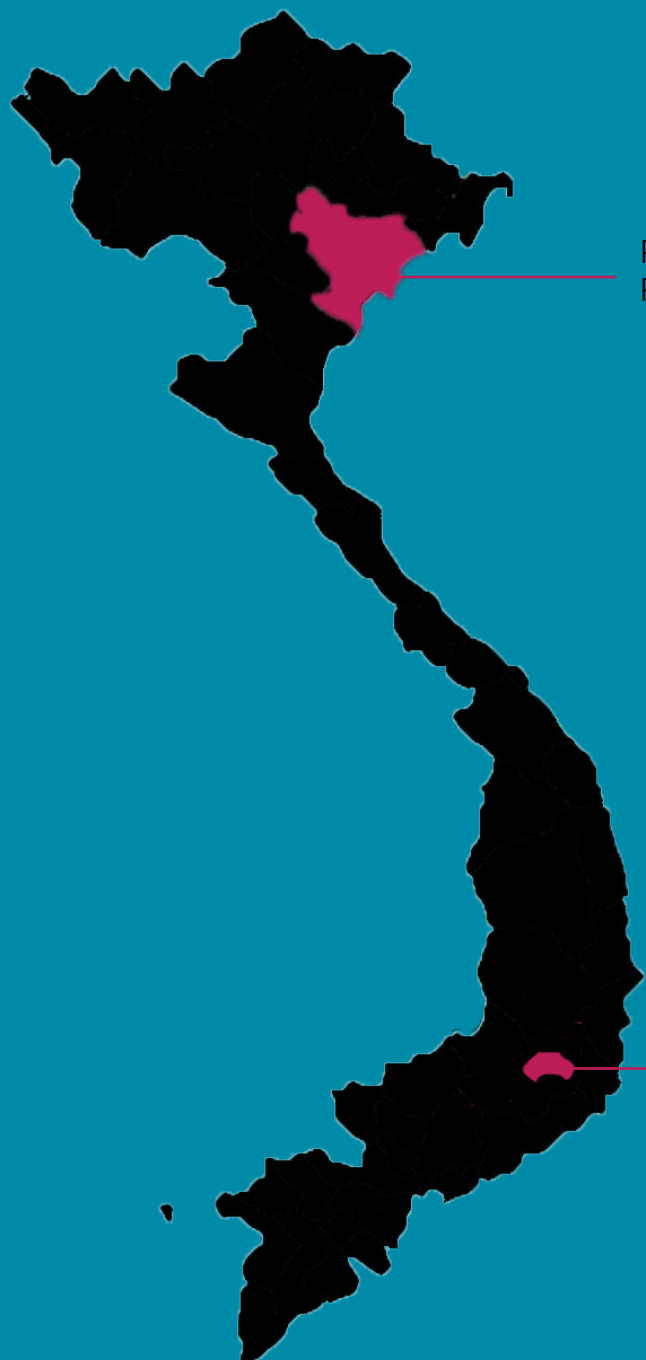
History

Vietnam was colonized by the French and became part of French Indochina in 1887. After the war for independence between 1946 and 1954, Vietnam was divided in a Communist north, and anti-communist south. The intensifying conflict with heavy foreign intervention, mainly from US troops, lasted throughout the sixties and early seventies. After the American army withdrew in 1973, North Vietnam took over and reunited Vietnam in 1975. Despite a relative peaceful period, Vietnam struggled economically due to conservative communist leadership, exodus of successful merchants and increasing

international isolation. The collectivization of farms and factories led to economic collapse and triple digit inflation.

In 1986, when the country's economy was in a terrible state, the government enacted the *Đổi Mới* (renovation) policy. It started reforms that were meant to change Vietnam from a centrally planned to a socialist-oriented market-economy. Increased market liberalization, modernization and export oriented development brought rapid economic growth. In 2000, international relations were normalized with most countries, and in 2007 Vietnam joined the World Trade Organization. Vietnam is still a single party state in which the Communist party of Vietnam is in power. Despite some of the freedoms that market liberalization has brought, the international community has raised concerns regarding human rights and political freedom.

VIETNAM



Potato growing area:
Red River Delta

Potato growing area:
Da Lat

QUICK FACTS

Population	87.840.00
BoP (% of total)	43%
Workforce in agriculture (% of total)	50%
Agriculture (share of GDP, %)	20%

Poverty

The progress in poverty reduction over the last 15 years has been remarkable, and Vietnam has often been hailed as an exemplary case. Currently 14.5% of the population live below the national poverty line. It is well underway of becoming a middle-income country. At the same time, it must be said that the national poverty line which is set at a monthly income of 400.000 Đồng (VND) (about US \$ 20,-) is rather low, even in a country which is considered to be cheap. The poverty headcount ratio at US \$ 2 per day (PPP), which is generally used to define the BoP, is still 43% (World Bank, 2008).

Poverty is mostly a rural phenomenon; 90% of the poor live in rural areas. And it disproportionately affects the ethnic minorities, as they make up 15% of the population, yet 80% of the poor (Minot, Baulch, & Epprecht, 2006)

Agro-Food sector

Once a food importer, it is now a net exporter of food and one of the biggest rice exporters of the world. The agricultural sector accounts for about twenty per cent of GDP, and 30 per cent of exports. Over 50% of total employment is found in agriculture, and nearly 70% of the Vietnamese population is engaged in agricultural activities. Diversification is relatively low, rice accounts for 45% of the agricultural production, and 60% of cultivated land (World Bank, 2011). Other important crops include coffee, tea, sugarcane, pepper, rubber, and cashew.

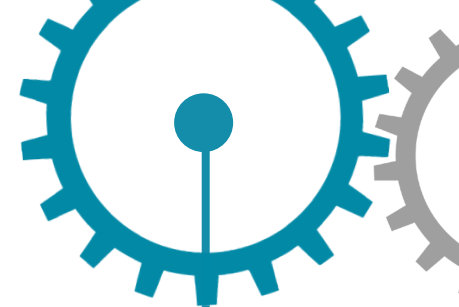
Potato:

French colonialists first introduced potatoes in Vietnam. For long potatoes remained a garden vegetable. When new short-duration varieties of rice were introduced, a winter cropping season between two rice crops became possible in Northern Vietnam.

Potatoes are mainly grown in the Red River Delta (RRD) of Vietnam between two rice crops. The summer months are too hot and too wet for potatoes to grow. In the mountainous area around Da Lat in Southern Vietnam, the temperature could allow for year-round production, yet the wet season from April to October diminish yields.

Potatoes are a source of both food and cash income for small farmers. The demand for fresh and processed potatoes in Vietnam and the entire Southeast Asian region is growing. Furthermore, the inter-cropping pattern is beneficial for soil conditions. Several studies (Dang Thi Hue & Batt, 2009; Dang Thi Hue, 2008; Tung, 2000; Nguyen Van Linh, 2001) indicated that the potato sector could considerably contribute to food security and poverty alleviation in Vietnam. It is therefore that this sub-sector is chosen to guide search efforts in tool-application.

FUNCTIONAL-STRUCTURAL ANALYSIS



The following chapter summarizes the findings of the functional-structural assessment. It is the result of interpreting statements and allocating them to each individual function. The respondents have been categorized by the type of organization they represent, when relevant this type is mentioned (#1: Government; #2: Knowledge institutes; #3: Extension; #4: Private sector; #5: NGO; #6: Farmer; #7: Other).

FI: Entrepreneurial activities:

Private sector

Four types of private actors that are important in the potato-value chain have been examined: potato seed suppliers, potato farmers, potato traders and potato processors. There are of course other actors that play a role, like fertilizer and chemical companies, supermarkets or open market consumers. Their role however, is less direct and less exclusive to the potato sector. Entrepreneurial activity in the potato-sector can therefore mainly be expected from the types of actors listed before.

Farmers

Farm size is incredibly small in Vietnam, especially in the RRD. This means that processors are forced to source from a lot of different farmers. In the RRD processors are therefore not working with farmers directly but through potato traders. The small size of farms has several consequences that are hampering entrepreneurial activity in the potato sector. First, limited farm size means that farmers use traditional, labour-intensive methods that negatively affects product price and product quality. Second, dealing with a lot of different farmers means that transaction costs are high, and that it is difficult to improve and homogenize quality. Third, as farmers bring very little quantities to the market, their bargaining power is limited.

Labour

Data from the provinces of Hung Yen and Hai Duong proved that only a quarter of the land that was suitable for winter crops was being used (#1). A processor claimed that it was difficult to find farmers that were willing to grow potatoes. Thus while land is available for winter crops such as potato, there are not enough farmers willing to do so. Respondents (#1; #2; #3, #6) stated that many farmers seek income from off-farm activities, mainly manufacturing. Even when farmers can earn more from potato production, working in manufacturing is preferred by some because of the better working conditions (#6, #7). Another important reason why some farmers do not grow potatoes is related too high initial investment cost (#5, #6).

High initial investments

Till recently, it had been common practice for farmer households to own one or several pigs or heads of cattle. However animal husbandry became more concentrated in single farms over time. Farmers therefore have less access to animal manure for the soil, and have become more reliant on chemical fertilizers (#5, #6). Small farms, high initial investment costs due to seed and fertilizer costs and limited skill among farmers, means that the margins for farmers are small. Small margins and limited land availability in turn cause risk-averse behaviour. This is reflected in high pesticide use to prevent loss of crops (adding to the investment costs) and limited

experimentation (limiting technology adoption).

Potato traders and seed quality

Potato traders witnessed two contradicting trends early 2000's: while the demand from processors and supermarkets increased, a decreasing number of farmers were willing or able to grow potatoes. The traders identified seed quality as a major constraint. Farmers used to store a part of their potatoes (10-20% of the harvest), to use as seed potato for the year after. Due to poor storing practices the potato seed degenerates substantially, and the risk for disease increases in each multiplication. Some of the traders therefore diversified their activities and started to import high-quality disease free potato seed (mainly from Germany and the Netherlands). This way they were able to "create their own market" (#4, potato trader).

Contract farming

Processors and traders have introduced a form of contract farming in which they provide the farmers with seed potato, and sometimes also chemical inputs and technical assistance, and buy a certain amount of potatoes back from the farmer at a fixed price (#4; #5; #7). This can be a risky business, the market price of potatoes can be volatile, and farmers can sometimes sell on the open market instead of to the trader when they can get a higher price. The trader can then not collect and deliver to the processor; the trader can then lose its contract and the processor has to make significant costs to source potatoes from somewhere else. Contract protection is very low, and it is nearly impossible to bring such a case to court (#1; #4; #7). These relations are therefore largely built on trust, and take a lot of effort to build and maintain.

Box 7.1 - Potato processing

Potato Processing

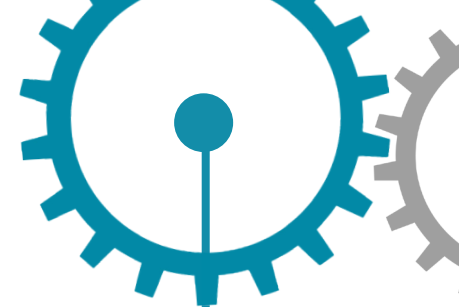
There are two main potato-processing companies in Vietnam: American multinational PepsiCo and the Korean firm Orion. Both firms process potatoes into potato chips.

A rising middle class and changing food patterns are driving an increase in demand, which is increasing by 30% annually (#2, #4). Demand peaks in January, just prior the Chinese New Year's celebrations.

Potato chips are a bulky product, the price/volume ratio favour processing close to the end-consumer. This is why there are chips processing facilities, while other types of processing like frozen produce or potato flour stay behind due to too high investment costs.

Potatoes for chips manufacturers need to meet certain quality criteria, of which the most important are: 1) sufficient dry matter content, as 'wet' potatoes require more energy to process and can badly affect the texture of the final product; 2) relatively round shape and uniform size; 3) clean skin because deep eyes in the potato requires to take off more skin; and 4) a good starch/sugar content ratio, too much simpler sugars cause chips to colour brown.

Both Orion and PepsiCo need to import more than half of the potatoes to meet demand for potato chips.



F2: Knowledge Development:

Sources of knowledge

There are some domestic sources of knowledge, such as domestic firms, foreign firms with Vietnamese research facilities and public Vietnamese knowledge institutes and universities. A significant part of the knowledge however is transferred from abroad. Multinationals often rely on knowledge created elsewhere. As do some of the donor organizations like the World Bank and the FAO. Several interviewees reported that most domestic firms do not engage in formal R&D activities, and are reluctant to experiment (#4, #5).

Focus of knowledge development

There are quite a sufficient number of research institutes and universities, especially in the area of agriculture. Their capacity and functioning however is debatable. A much heard complaint is that their focus is very government oriented (#4, #5, #7). A mismatch exists between the activity of the knowledge producers and the needs of knowledge users.

Research capacity

Most respondents agreed that the capacity of research institutes was rather weak (#4, #5,

#7), but steadily improving (#5). The latter was mainly attributed to a growing number of academics that have enjoyed (part of) their studies abroad. One respondent said: “..there are some good old ones [academics], who studied somewhere in the Communist block, then a gap, and then some young academics that recently went abroad”. One important skill, or attitude, that is particularly missing among Vietnamese academics that did not have the chance to study abroad is what was referred to as ‘critical thinking’ (#5). While people from many countries in a similar state as Vietnam see studying abroad as a ticket to ‘get out’, many Vietnamese tend to come back (#1, #5).

Research collaboration

From the respondents, the NGO’s seemed to have the most experience in collaborating with knowledge institutes and universities. A complaint confirmed by all of them was that often project management skills are lacking, collaborations required a lot of attention and clear target setting from the NGO side, and they would need to be on top of it. Another difficulty was found in that researchers often lacked the skills of getting from research results towards full reports, and that research organizations can be possessive of results (#5).

Research institutes and universities are often eager to collaborate with NGOs and donors, as it often involves training of staff members (#5, #7). For NGOs and donors this can be part of their development goals, at the same time, the involvement of Vietnamese knowledge institutes is often very beneficial because of their thorough understanding of the Vietnamese context and language, and because it can make the process of engaging with both central government and provincial governments a lot easier (#5). One private firm indicated that they would sometimes collaborate with research institutes because of their lab facilities.

Collaboration between research institutes is generally weak (#1, #5). They are often unaware of other similar research initiatives in other institutes. Two reasons were given for the weak collaboration. An NGO stated that institutes often compete for the same funding, and are therefore hesitant to share. Another interviewee, who worked for a government think-tank, stated that the reason institutes do not collaborate, is because under Vietnamese law it is difficult to pool resources. Both interviewees stated that collaboration with international parties offers a framework in

Box 7.2 - Fresh Studio

Fresh Studio

Fresh Studio is an independent privately owned consulting firm, active in different parts of Southeast Asia, with three locations in Vietnam.

In a consortium with an international fertilizer company and a large multinational processing firm they have started a project around potato cultivation trials, in which they test several varieties and farming practices. Through their established network in Europe and their good reputation they had access to protected varieties, in contrast to Vietnamese knowledge institutes.

which Vietnamese institutes do work together.

Conflict of interests

Researchers of all institutes and universities are on the government's payroll. This means that wages are generally low. Therefore, many researchers or research groups are forced to seek other ways to generate income (#2, #5). This can be through projects with donors, NGO's or private firms, or by developing their own commercial activities. It has been reported that this can cause a conflict of interests, in which the quality and objectivity of research suffer from the counteracting commercial interests of individual researchers or research groups (#4, #5).

Protection of intellectual property

Intellectual property protection is weak in Vietnam. The recent WTO accession has forced the government to make efforts to resolve this issue,

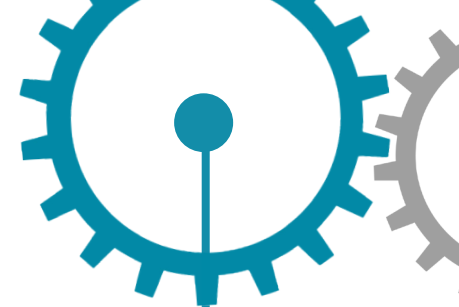
so changes can be expected. One interviewee explained that some foreign variety owners are reluctant to export new varieties to Vietnamese institutes for testing, as they are afraid that they will start their own multiplication facility without paying compensation to the variety owners (#7). The institutes can therefore often only experiment with 'open' varieties, for which no compensation needs to be paid. And although the new varieties that stem from these open varieties might not necessarily be the best varieties for Vietnamese conditions, the research institutes will promote them because they might have vested interests. (#7) This hampers or at least delays the approval of new varieties imported or developed by the private sector, which have to be tested and approved by the Ministry of Agriculture and Rural Development, and can easily take three years (#1). One such effort of a consortium of private enterprises is described in box 7.2.

F3: Knowledge Dissemination:

There was found to be a very top-down approach in knowledge development, and that it often does not meet the needs of the knowledge users. The same is largely true for the mechanisms for knowledge dissemination (#1, #4, #5), in which public extension services play an important role.

Top-down

In general, the interviewees had quite a negative view of the extension services (#4, #5, #7). One often heard complaint was that it had a very top-down rather than market-driven approach. The extension services would not look at the needs of local farmers, but instead push for methods and techniques approved by government (#5, #7).



The focus of the extension services was said to lie mainly on commodities like rice and coffee, and much less on vegetables and potatoes (#5, #6). It was also stated that the focus lies very much on the production, and that there was no attention for training on post-harvest handling or marketing (#5, #7).

Limited capacity for a complex task

Extension services generally employ one extension worker per commune. To address all households in a commune is a daunting if not impossible task. This is further complicated by two reasons: first, many farmers are illiterate, so knowledge needs to be transferred verbally. In some regions many of the ethnic minority people do not speak Vietnamese and can therefore not attend community training. Literacy rates are improving, together with an increasingly wider spread of radio and television, this brings an opportunity for much more efficient knowledge transfer. And second, an enormous variety can be found within communes in crops, livestock, and soil conditions. The training of extension workers is therefore very general, “they know everything.. but nothing” one interviewee (#1) explained.

Method of extension

There was also some critique on the methods of extension. Due to the lack of capacity, farmer trainings were infrequent, but also often in the wrong time of the year related to harvest (#1, #5). This meant that sometimes farmers would be too busy, and would for instance send their kids (#5). It could also be that there was too much time allowed between the time of training and the time of application, and that farmers would thus not remember the new techniques fully. Training methods were criticized for their formal nature, while it would help farmers much more to show them

the new techniques in the field. They could then not only see *how* it works, but also *that* it works (#4, #5, #7). There were some indications from both governmental as well as NGO and private sector actors that some improvements are being made. Especially regarding the latter, field trials and demo-plots are becoming more common.

F4: Guidance of Search:

Targets

The government sets production targets for agricultural production. These targets are often unrealistic, have no connection with current reality and provide no ‘road to get there’ (#5). An example was given by one NGO on the production of cattle. The government had set a production target for a certain amount of tonnes of produced beef, this target was based on a production potential for industrial beef production. In reality, 80% of the beef comes from smallholder farmers who own two or three pieces of cattle. It was considered very unlikely that this would change anytime soon. The Vietnamese government is criticized for setting unrealistic targets, without presenting any strategy for how these targets could be met (#4, #5, #7).

Structural approach

Several interviewees indicated that there is no structured, countrywide approach regarding the production of potatoes (#4; #5, #7). It was reported that there was no real collaboration between the governmental actors located in the RRD and the ones around Da Lat (#7). There are also very weak linkages across ministries. One interviewee said that there was a recognized need in the agro-food sector to move to higher value processing, but that it was very difficult to mobilize the entire system (#1).

Recognized constraints

Different actors recognized different issues as being the major constraint for the development of the potato-sector. Some stated that it was a lack of labour availability that caused few farmers to produce potatoes (#1). One interviewee stated that the skill of the farmers was an important constraint, and that highly skilled farmers could get up to 3 times higher yields than most farmers in the RRD that have average skills (#4). Perhaps the most often heard constraint was seed quality, but different directions for improvement were mentioned. (#2, #4, #6). First, the current lack of cold storage capacity prevented farmers and traders to store enough good quality seed (#6). Second, the import of foreign good quality seed was too expensive; therefore the Vietnamese should produce their own seed potato (#2). Third, there is no good variety for Vietnamese conditions; therefore new varieties should be introduced (#4).

Focus of government

Several interviewees, mainly from the private sector and NGOs stated that the government was focusing its efforts on the wrong things. In their eyes the government had no clear picture of private sector demands. It focuses

too much on production, and not enough on infrastructure and market information. It also lacked the understanding of economic incentives and risk perception at the household level, it therefore had no insight in to what extent farmer households would be willing to invest in adopting certain kind of innovations (#5).

F5: Market Formation:

World Trade Organization (WTO)

Vietnam has recently become a member of the WTO, this offers new opportunities for producers in Vietnam, opens up the market to foreign players and it forces the government to professionalize their trading policies.

Institutional barriers

There are some institutional barriers and some institutional incentives for market formation. The long time it takes to formally introduce new varieties is an important institutional barrier for the processing industry (#4). Under Vietnamese law it is also difficult to franchise, this is reported to be one of the major barriers for more supermarkets to open in Vietnam. Supermarkets could play a role in boosting demand for both fresh potatoes and processed

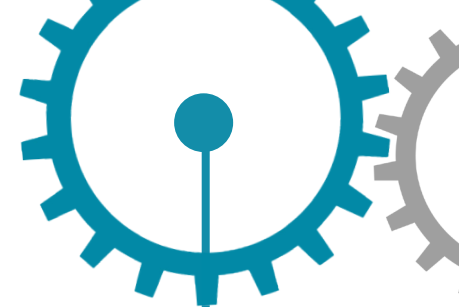
potatoes (frozen, crisps).

Institutional incentives

The government of Vietnam has a strong subsidy culture, especially on farmer level (#1, #5). Provincial government officials have provided data on subsidy schemes over the last 10 years. The subsidy for potato farmers had increased recently, still the total area used for potato production had been declining. Subsidy is mostly given in the form of chemical inputs or potato seeds. Both government officials and NGOs stated that sometimes farmers would misuse the subsidies by selling the subsidized fertilizer on the open market.

Market Premium

The improvement of quality of food products is one of the goals of the government (#1). It is also a much-advocated strategy by NGOs to raise the income of farmers (#5). In reality it is often hard to get a market premium based on quality. In some products there is a worldwide standardized grading system, for instance in cashew nuts. A number of indicators are used to grade the cashew nuts, and a higher price is paid for better grades. This provides a strong incentive throughout the value chain to improve the quality. In other sectors, for



instance in coffee, this is not the case. Therefore the coffee sector in Vietnam remains one of low-quality, low-value, small-margin export. In the potato sector it can also be difficult to get a market premium based on quality (#4, #6).

Certification

There have been efforts to create market premiums for a variety of agricultural products through certification schemes or geographic indicators. The Vietnamese government has introduced Vietgap certification. Many of the interviewees (#4; #5; #6; #7) were very critical towards this effort. Vietgap certification is said to be easily corruptible and continuity checks are very infrequent. In order to comply to the Vietgap certification, the farmers need to invest both money and effort, yet due to lack of trust from the market in the Vietgap certification system it is not always possible to get a higher price for the products. Efforts to introduce geographic indicators failed because there was no real market for it. One recent example of market formation is provided in box 7.3.

Instruments for market formation

Interviewees pointed to a government instrument that is gaining popularity, the Public-Private-Partnership, or PPP (#1, #4, #5, #7). It stimulates the creation of partnerships between one or several private parties with one or several public parties. PPP's have been established in some commodities like cocoa, tea and coffee. These PPP's generally include large multinationals like Mars, Cargill, and Nestle. PPP's can strengthen the ties between public and private parties and align business interventions with policy objectives like poverty alleviation. Yet one interviewee explained that it has become a little bit of a buzzword, and that the Vietnamese government has no clear picture of what such a PPP should entail (#7). Another example of a mechanism to stimulate market formation for the poor is given in box 7.4.

Box 7.3 - Niche market - H'Mong beef

Niche market - H'Mong beef

Recently, sustainable beef production was set up in remote parts of Cao Bang province in northern Vietnam. H'Mong people, one of the ethnic minorities that reside in these mountainous areas, carry out beef production. The project entails engaging poor households in cattle-breeding interest groups, the construction of a professional slaughterhouse, and applying a traceability system for the beef.

The project has exclusive sales arrangements with a local distribution agent and a supermarket.

The project has succeeded in creating a high-end niche-market, receiving a market premium for good quality beef. Thereby improving the income of 500 farmers. Private parties have initiated this project, while they received support for the start-up of this project through the Vietnamese Challenge Fund (more on this financial instrument is found in box 7.4); it is designed to be commercially sustainable.

F6: Mobilization of Resources:

Cost of capital

Vietnam has been struggling to keep its inflation under control, the last decade it fluctuated between 3% and 9%, with extremes of 24.4% in 2008 and 18.6% in 2011 (CIA, 2012). An effect of this is that the interest rate is very high. Banks could charge an 18-22% interest rate on loans. This

makes it incredibly expensive for farmers and the domestic private sector to make investments.

Investments

Several interviewees stated that Vietnamese lack long-term thinking and planning (#4, #5, #7). A high interest rate is certainly not helping to cure that. When people or companies do borrow money, they tend to do it for short-term investments. Agricultural investments are almost exclusively long-term investments. Investments in agriculture therefore stay behind in comparison to investments in other sectors. One interviewee claimed that the share of investments in agriculture is 7-8% of total investments, while the share of the agricultural sector of the GDP is 23-24%, the sector employs 50-55% of the people, and the rural population accounts for 70% of the total population (#1). The government had promised to double agricultural investments every 5 years, due to the financial crisis it has not been able to keep this promise.

Security on investments

Another reason why farmers and companies stay away from long-term investments is because many of these investments will become fixed to a certain piece of land. And since land-leasing rights are relatively short-term, this is not always worthwhile. There have also been cases where the government has dispossessed farmers and small businesses from their lands for the sake of urban development without proper compensation (#5). Therefore land ownership has become a relative concept.

Access to capital

Interviewees were asked if they thought that there was capital looking for investments, or investments looking for capital. Most interviewees stated the former was true, that capital was waiting to be invested (#5,

Box 7.4 - Markets4Poor Challenge Fund

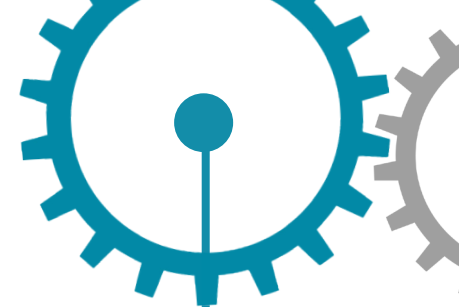
Markets4Poor Challenge Fund

The Vietnam Challenge Fund is a financial instrument that provides matching grants of between US\$ 40,000 to 250,000 per project. Launched in 2009, it posed three challenges in the agricultural sector on which the VCF received over 200 submissions, a number of applicants is supported in further business plan development, and finally 11 projects received grants.

This instrument specifically targets the excluded, the projects aim to: have a positive impact on the poor; generate profits that ensure commercial sustainability; and catalyse a systemic change in the relevant market for that product.

The Vietnamese Challenge Fund is part of the Making Markets Work Better for the Poor program, run by the UK Department for International Development, the Asian Development Bank and the Vietnamese Ministry of Planning and Investment.

#7). A number of reasons for this situation were given. Banks are generally understaffed, and they are mostly staffed with young people who have little experience and skills in assessing business plans (#7). At the same time, there is a lack of good business plans as entrepreneurs and small businesses often lack the skills for writing good quality business plans. The procedures one has to follow to get access to loans can be complicated,



especially for unschooled farmers and small businessman. People also often lack proper collateral as they often do not own but lease their lands (#5).

Public spending

Government funds research institutes, universities and extension services. They all indicated that they were under resourced, and therefore had to look for other sources of income. This is being done through commercializing activities as an organization, or by looking for other sources of income on an individual basis. In both cases this can cause conflict of interests or lack of commitment (#1, #4, #7).

Human resources

Interviewees stated that there were several deficiencies in human resources throughout the system. The main skills that were found to be lacking were advanced farming skills (#1), business plan development skills (#5), business plan assessment skills (#7), critical research attitude (#5), and being able to write reports (#5).

Explanations for these deficiencies are the weak extension and education systems. The reach of both systems is relatively good, although progress needs to be made to increase access for people that belong to ethnic minorities and/or live in remote rural areas. Yet especially the methods of training and education are criticized (#4, #5).

F7: Creation of Legitimacy

Food safety

From a consumer perspective, serious legitimacy issues arise around food safety. Vietnamese consumers are wary for domestically produced food

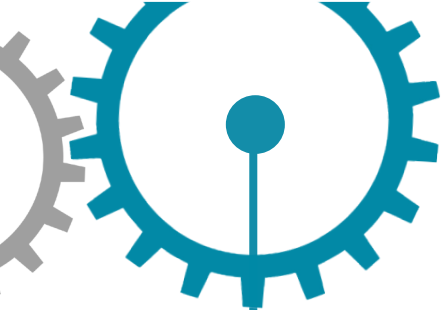
because of high chemical use, poor post-harvest practices, and corruptible and inconsistent food quality checks. There is no independent self-funded certification scheme, the Vietgap certification scheme is widely distrusted. If consumers are offered a choice, they prefer food that is either imported, or from a local source that they know and trust. Some foods are considered safer than others, potato has quite a good safety reputation, although cheap Chinese imported potatoes are distrusted, as it is known that they frequently use chemicals to prevent sprouting.

Government commitment

There are mixed signals from within the government regarding their support and commitment towards the potato sector. Some central government officials indicated that they regarded potato as an important and promising crop. Mainly for its potential for value adding processing and increased income for farmers. However, representatives of the national and provincial extension services, as well as most local government officials were not as convinced. They did not expect the potato sector to grow over the coming years, nor did they see it as an important crop for raising income of farmers. Provincial governments kept providing subsidies, but extension workers focused on other crops.

Coalition forming

As was said before, the number of households involved in farming potatoes had decreased over the last couple of years in the two provinces that were visited. Although there has not been collected any data on the number of households involved in potato growing in other provinces, these numbers are somewhat indicative. From the farmer group discussions that were held in these provinces, it became clear that the price volatility was a major concern for many households. Although the prices the farmers



received for the 2010-2011 harvests were appealing, the prices of last year's harvest had been disappointing, and could lead to the abandonment of the crop for some households (#6).

Coalition forming is rare on all levels. There is little collaboration across ministries (#5), farmers are somewhat reluctant to collaborate (#5), there is no collaboration or coalition forming on any level between competing processing firms (#4), and there is no potato industry association (#1, #2, #4, #5).

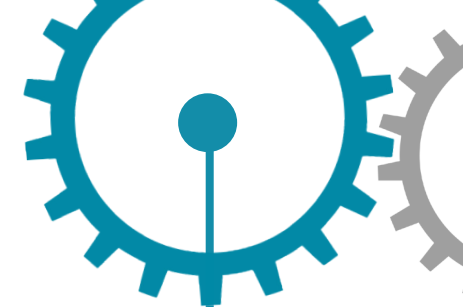
In the communist era, farmers were organized in collectives. In these collectives they were forced to produce large quantities of food for the collective, while receiving hardly enough food to feed the family. Not only is the translation for 'collective' and 'cooperative' the same in Vietnamese, the bad memories of organized collaboration make coalition forming among farmers rare. There is some collaboration among farmers on communal level, but not to the extent in which they share their land, act as one buyer of inputs or one seller of agricultural produce (#5, #6).

The two main processors, Orion and PepsiCo, are fierce competitors. They do not collaborate on any level, nor do they form a coalition with each other or other parties from the industry to lobby on a governmental level (#4). PepsiCo did attend World Economic Forum (WEF) meetings in Vietnam, through which policy could be influenced. In some of the major agricultural sub sectors, coalition forming is facilitated by Dutch organization IDH Sustainable Trade, who brings parties from throughout the value chain together, to come to high-level agreements to improve the environmental and social sustainability of the entire sector.

Some interviewees, mainly NGOs, stated that sometimes collaborations with research institutes was sought to create legitimacy. It was easier to get support and acceptance from government actors if domestic research institutes were involved. This could then also help to get local governments on board, as they are somewhat reluctant to engage in activities without clear consent of the central government (#5).

ANALYSIS

8



As potato is a winter crop that fits ideally in the cropping pattern of Vietnamese farmers, many actors see it as a crop with significant potential. The relatively large income for potatoes compared to for instance rice production indicates that it could substantially contribute to poverty alleviation efforts. For advancement of the potato sector, innovativeness is required to overcome the existing barriers. In this research we've identified both some of the barriers the potato sector faces, as well as the constraints that preclude innovative efforts to overcome these barriers. Wherever relevant, a reference to one or more functions has been given.

A first and important observation is that the main constraints that were identified by different stakeholders in interviews and literature were numerous and very diverse. This is an indication of poor alignment among stakeholders [F4]. It also means that efforts to overcome these barriers are dispersed and non-cumulative in nature. This is an unfortunate situation, especially in a system that is not well endowed with financial and human resources [F6].

A major concern for the potato-sector is the quality of seed. Poor seed quality causes low quality potatoes, high susceptibility to disease, and low yields, all resulting in low income for the farmer. There are generally three sources of seed potato. First, legally imported seed, mainly from the Netherlands, Germany and Australia. This certified seed is generally of high quality, it brings high yield and good quality potatoes, however, the costs are high and the availability is low, because potato traders cannot bear the financial risks of too large of imports. Second, potato seed is illegally imported, mainly from China. These potatoes are often not real seed potatoes but ware potatoes. This means that they have a much higher susceptibility to disease, and produce lower quality potatoes. And third, potato seed is produced in Vietnam. This means that multiplications need to be done in Vietnam, because yields and quality are only acceptable after the third or fourth multiplication. The climate in Vietnam only allows

potatoes to be grown a short time of the year; it thus takes a long time before the necessary multiplications have taken place. In the hot and wet summer months, potatoes need to be stored. Without proper storage facilities (cold, dry and dark) the potatoes deteriorate quickly. Storage facilities are expensive and current storage capacity is low. Therefore the locally produced seed is often of low quality. There are thus two ways of improving the quality of seed in the Vietnamese potato-sector, by improving the availability and distribution of high quality legal imports, or by improving the seed production of Vietnam, and increase the availability of the required cold storage. The issue of seed quality strongly relates with variety availability.

MARD only allows a limited number of varieties of potato to be grown [F5]. This is difficult to enforce at the farm level and impossible to control in informal trade. Formal companies, like importers and processors, do have to comply with MARD regulations. Varieties differ in terms of optimal growing conditions, taste and nutritional content, resistance to disease and parasites, and appearances. The processing industry, which mainly process potatoes for the production of potato-chips, prefer the variety 'Atlantic'. This variety is used for potato-chips production in most places of the world because it has good qualities like a low sugar content, little amount of eyes, round shape, and it stores a relatively low amount of

water. It is however not the ideal variety for Vietnamese climate conditions, and therefore very susceptible to 'late blight'.

Farmers, processors and traders would therefore like to have access to other varieties. To get a new variety to be approved by MARD is however a complex, non-transparent and lengthy process. This has kept actors from testing and starting this process, although recently one processor firm has picked this up (see text box 7.2 Fresh Studio). To be able to test with new varieties, these must be bought from specialized foreign companies. These foreign companies are reluctant to do business with Vietnamese research institutes, due to low IP protection [F2, F3] and poor track record regarding breach of contracts. Research institutes are therefore restricted to do research on open varieties, which are often of less quality, and do not fit the demand of farmers and processors [F2]. Often the research institutes, or members of the research institutes engage in commercial activities involving these varieties, they therefore benefit from low variety availability, while they have influence on the process of approving new varieties as one of the main consulting bodies to the central government. It is clear that

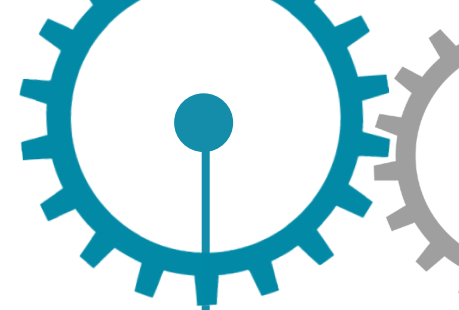
incentives are counterproductive and driving the private sector and research centres apart [F3].

There is also a mismatch in knowledge needs of farmers on one hand and knowledge development [F2] and dissemination [F3] on the other. Farmers lack capabilities and resources for demand articulation [F4, F6]. Research centres and extension services are therefore unaware of knowledge needs. And there is little private research and extension because farmers lack the resources and the level of organization that is needed to pool resources [F6]. Public, private and NGO-type parties lack clear understanding of BoP households and the incentives for adoption of and experimentation with for example new farming practices or new technical solutions. Skill and adoption levels among farmers therefore remain low [F1, F6].

Many innovation systems in developing countries suffer from short-term visions of their actors. There are several factors that contribute to this short time horizon, e.g. high interest rates [F6], low level of asset and land security, and inexperience with long-term planning [F1]. If an investment is made, the investor would usually seek for quick

returns, these are easier being found in, say manufacturing than in the agro-food sector [F1]. Although capital is available, investments in the agro-food sector are limited [F6]. The main reasons are: 1) the high-interest rate and resulting short-term rent seeking behaviour of firms and investors, 2) the difficulties for farmers and small firms to access capital, as skills related to business plan writing are often lacking, and 3) due to the low capacity of financial organizations to assess investment plans, especially those related to agriculture.

There is little investment in knowledge development from the private sector [F2]. Especially domestic private sector actors neither perform formal R&D, nor do they pay significant attention to the knowledge that is developed in the public sphere [F3]. Low IP-protection could withhold private actors from investing in R&D, as this means that it is difficult to reap the benefits. Public knowledge development is weak and does not fit private sector needs [F2]. The potato sector also does not seem to be high on the list of priorities within MARD institutions [F7]. Farmers are often risk-averse, and as land is a constraint, it is not easy to dedicate land to experimentation with uncertain outcomes [F1].



The government is making plans to take away some of the constraints. The land law is under revision. Simplifying land transferability and leasing constructions, lifting land ownership ceiling, and extending lease agreements must contribute to land accumulation and increase commercial activities and investments in land [F5]. This could spur private sector investment, professionalize farming methods and efficiency, and improve bargaining position of farm holders and at the same time simplifying quality control from supermarkets and processing industries [F1]. The number of supermarkets is likely to increase, due to favourable market conditions: a rising middle class and a market in which restrictions on foreign direct investment and franchising are being lifted. Both the rise of supermarkets and the commercialization of agriculture are hailed for their potential to spur agricultural productivity and reduce poverty [F5]. However, research

has showed that supermarkets can have a negative impact on poverty alleviation in dualistic agrarian systems (Poulton & Dorward, 2010). In countries with dualistic farming systems, like many countries in Latin America, smallholder farmers struggled to maintain their position within the supply chain when supermarkets spread rapidly. In China however, experience with a relatively egalitarian agricultural system showed that the rapid expansion of supermarkets under pressure of urbanization forced supermarkets to come with innovative ways of sourcing from smallholders (Poulton & Dorward, 2010). The two policy outcomes of commercialization on one hand and supermarket expansion on the other, thus interact, and their combined impact on poverty alleviation is not necessarily positive.



RECOMMENDATIONS

9

The scope of influence of innovation intermediaries is somewhat limited, especially regarding formal institutions and physical infrastructure, as these fall directly under the authority of governments. The main interest of this research is thus in those issues that do fall within the scope of influence of intermediaries, while taking the changing institutional context into account. The previous chapter showed how these issues are interrelated. Different issues might come forth from the same underlying problems, and can contribute to the same adverse consequences. The recommendations presented in this chapter target some of these nodes to negate various ill influences, and use various paths to reach impact.

Recommendation #1: Offer framework for collaboration

Research institutes (and domestic private actors) find it difficult to collaborate, causes can be found in that it is difficult for research centres to pool resources; and that institutes compete one another for the same funds from the government. However, experience has showed that collaboration is easier when international parties are involved. Intermediaries can offer a framework for collaboration, in which it must perform key intermediary tasks like managing expectations, ensuring transparency, and building trust. The involvement of an intermediary as a governing body could also enhance the trust of international firms who would otherwise be reluctant to share IP-sensitive information, for instance in the case of potato variety testing. This recommendation specifically aims to enhance interactions for the purpose of knowledge development.

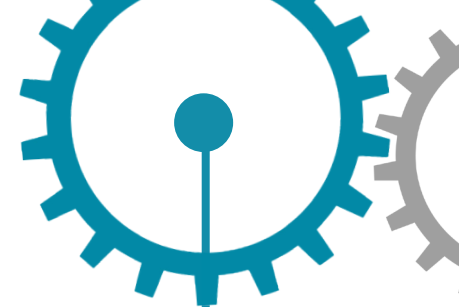
Recommendation #2: Encourage coalition forming among key actors within agro sub-sectors.

Coalition forming is critical for the entire sector to progress. There is no shared vision among actors in the potato sector. An intermediary, as a relatively impartial party, is in a unique position to initiate and facilitate this process. The objective of the newly formed coalition should be to prioritize issues that are to be resolved in order to give direction to public

and private research, as well as to policy development. This is needed throughout the agricultural sector, but would benefit from a per sub-sector approach. In such a coalition, parties who would normally compete can unite to bring about changes that benefit the whole sector. In the potato sector the focus of such a coalition should be on extending the list of approved potato varieties through research and lobbying activities and on systematically improving the skills of farmers through training and resource allocation to extension services. The intermediary should not only be involved as initiator, but also to guard that the interests of the poor are served. Furthermore, by providing directions for future development, market uncertainties can be reduced which can induce long-term investments from private sector actors.

Recommendation #3: Organize resource pooling for farmers, farmer organizations and small and medium enterprises

Research and extension are not demand driven, partly because the demand side is not organized. The establishment of product associations could spur demand-driven research, which would thus better fit the needs of knowledge users. Both public and private parties can play a role in this, for instance through a challenge or bidding system. Public institutes lack financial resources, but often do have room for engaging in commercial



activities, while still attaining the targets set by MARD. In this way, the commercial activities can be more aligned with system needs, instead of counteracting them. Especially challenge and bidding instruments need to be carefully designed, as there are risks for corruption and favouritism. This recommendation aims to effectuate a better match between producers and users of knowledge, with a focus on small farmers and businesses. Intermediaries need to facilitate demand articulation of small farmers.

Recommendation #4: Develop clear understanding of incentives at household level

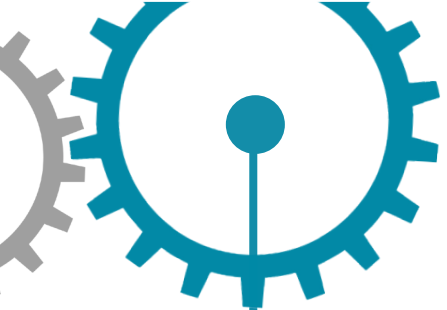
Intermediaries should coordinate research that contributes to the thorough understanding of BoP households. Studies should aim to map how BoP households deal with real and perceived risks, and which incentives are important for adoption decisions. This is necessary to define the boundaries of innovation, or the 'innovation sandbox' (Prahalad, 2005). Currently, private actors and knowledge developers lack such knowledge and are therefore unable to develop inclusive innovations. This is specifically true for new farming methods that require initial investments from farmers. While farmers are generally willing to experiment, the risks they can bear are limited. To develop inclusive innovations, innovators need to have a thorough understanding of what risks farmers can and are willing to take in which circumstances. This kind of knowledge facilitates a better match between companies and consumers, thereby contributing to more effective spending on product- and service development, as well as to better products for BoP consumers.

Recommendation #5: Identify incentives for collective formation and create enabling environments

While there are clear benefits for collective formation, especially regarding bargaining power towards processors, traders and supermarkets, the level of organization of farmers in Vietnam is low. This is both due to historical reasons, as well as institutional barriers. Attempts to create collectives by NGOs and other organizations are often unsuccessful as there can be strong aversion from farmers. There are however instances in which collective formation is successful, insights in which incentives brought farmers together, and which environmental factors can be regarded as prerequisites for successful collective formation can be a first step in recreating these enabling environments in order to stimulate more collective forming for the benefit of farmers.

Recommendation #6: Monitor and offset negatives of institutional change

Several institutional changes have been announced, for instance policy changes that aim to promote land accumulation or liberalize markets. Although these measures can potentially contribute to poverty alleviation, examples from other countries have shown that these well-meant interventions combined can have negative effects. Intermediaries should closely watch how these institutional changes unfold. Intermediaries can then quickly respond to the changing needs of the system. For the Vietnamese potato sector the rise of supermarkets and the growing possibilities for land accumulation offer great opportunities for professionalizing the sector and boost productivity. At the same time, a dualistic agricultural setting in which smallholders exist next to big farming companies can put pressure on product price and bargaining power of smallholders. Intermediaries must make sure smallholders retain a competitive position by introducing



innovative models in which supermarkets and processors can source from small producers at a competitive price.

Recommendation #7: Develop clear picture of labour shortage and surplus across regions

The divergent views on labour availability and related issues could suggest that large variations can be found across regions. A clear view on labour availability should lead to strategic choices on what kind of initiatives should be supported in which regions. In some areas there is likely to be a labour surplus and a strong demand for service providers. In other areas competition of manufacturing and other industries causes a labour shortage and high pressure on labour prices, in these areas the focus should be on the development and diffusion of mechanized farming and other labour saving techniques. This is to prevent that innovative efforts are supported that further contribute to problems of labour availability, instead of solving it.

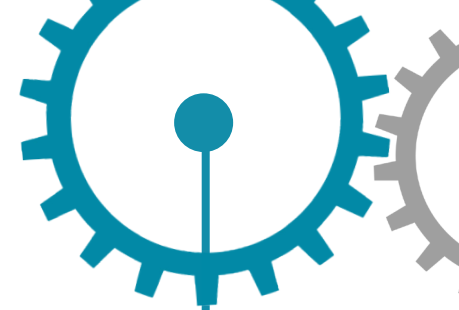
Recommendation #8: Develop instrument to support business plan development

There are two problems that separate capital from investments. First, entrepreneurs often lack skills necessary for business plan development. Second, investors lack skills to properly assess business plans and related risks, especially in the case of long-term agricultural investments. Intermediaries should offer support to entrepreneurs in overcoming the hurdle of making a solid business/investment plan. This could be through capacity development programs or by offering physical or virtual incubator space. Matchmaking support should be offered to connect entrepreneurs to investors, in these matchmaking efforts, specific attention should be given to capacity development among investors for making quality assessments

of business plans. This is to induce a greater share of investments in agriculture, as currently a disproportional share of investments is made in other sectors. Investments in the agricultural sector can contribute to market efficiency that both lower the price of inputs, as well as increase the price of the final product.

Recommendation #9: Facilitate establishment of independent body that offers advice to SMEs on policy and regulation

Both domestic as well as foreign SMEs that start new activities suffer from unclear regulations and non-transparent enforcement. Activities in different parts of the value chain fall under different mandates of ministries, the interfaces of these mandates are unclear. Some parts of the value chain may involve three different ministries, while other parts lack clear oversight. A separate, independent but closely linked organization should be set up. In essence it is also an intermediary, yet it is more of a broker activity. It should be developed as a commercial organization in order to ensure financial sustainability. It would offer services to foreign and domestic enterprises, farmer organizations and product associations. An innovation intermediary can bring in experience and capital from relevant partners to initiate such an organization.



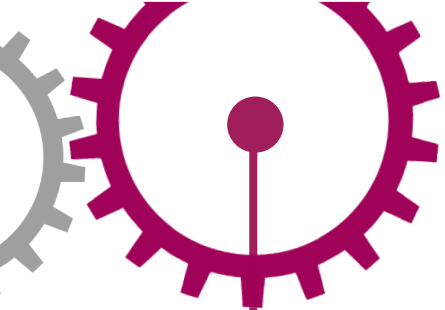
EVALUATION

TOOL EVALUATION

CONCLUSION

DISCUSSION





TOOL EVALUATION 10

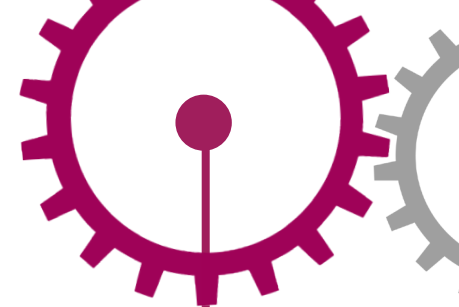
The FIS-framework has been used as a way to analyse the inclusive innovation system around the agro-food sector of Vietnam, and with specific interest for the potato-sector. In this chapter some of the benefits of such an analysis will be presented, as well as weaknesses that require improvement and consideration. Expert interviews within and outside of the innovation intermediary that employs the researcher have been used as input for this evaluation.

A strong point of this approach is that it encompasses many facets of innovation. Yet this can also be considered a weakness. Critics of system approaches have argued that it is a theory of everybody working with everybody on everything, and that it therefore is not sufficiently relevant to be operationalized in science, technology and innovation planning (Hall, 2005). At a general level the innovation systems approach is a useful policy tool for thinking about how capacities can be developed, this alone however, maybe too simplistic an analysis to be policy relevant. The function analysis proposed by Hekkert *et al.* is more specific and provides better insight in where capacity needs to be developed. The attempt of Wiezcorek *et al.* to simplify system assessment and directly couple this to systemic instruments aims to make it a more hands-on assessment tool for policy makers. However, reducing rich qualitative data into a function scorecard and a set of general policy instrument goals is not suitable for innovation intermediaries, because it overlooks the complexities of each individual innovation system. This research has showed how the function analysis can be used as a guideline to identify systemic weaknesses, which in turn can be used for strategic decisions by innovation intermediaries.

It is important to acknowledge that the list of functions is not exhaustive. The framework has been used and validated in several instances, but always in the case of technological innovation systems. By using it as a flexible guideline rather than a fixed framework, the tool can be applied without being it as if wearing blinders.

The open and data-rich character of the tool are experienced as key advantages. The systemic approach is broad enough to incorporate a wide array of identified barriers, and at the same time, guidance of search in terms of functions and structural elements is sufficiently narrow to arrive at systemic weaknesses that are context-specific and concrete. However, it must also be acknowledged that this approach is highly dependent on the experience and preferences of the researcher. This is not necessarily a bad thing, moreover when the researcher is affiliated with the intermediary that is to design and deploy the interventions. Still, efforts could be made to make the tool less reliant or dependent on the experience and preferences of the person(s) applying it. This is however a balancing act as such efforts could result in ever more structural approaches in which data-richness is lost, as well as the ability to identify issues that cannot be fitted directly under the framework.

Based on the application of the tool to the case of Vietnam, suggestions can be made for indicators that can be used to structure search efforts. It cannot be stressed enough that such a list is not, and cannot be exhaustive, and that it should only be used to come to certain findings quicker, without excluding other potentially relevant findings that cannot directly be linked with one of the indicators. The intermediaries that use this approach should constantly develop and update such a list of functions and indicators in a learning-by-doing process, and adapt it to the purposes of their organization. Innovation intermediaries can be of a kind that



focus more on financial leverage or on knowledge transfer, and could for that purpose include indicators that fit their needs, however, no function should be studied in isolation, as the value of a systems approach is that it shows how issues are interrelated, and have common causes as well as consequences. A list of functions, indicators and diagnostic questions is given in table 10.1.

Such a list contributes to the replicability of this tool. Ideally, the analysis could be outsourced to partners in the respective countries, without knowledge on innovation systems theory being a prerequisite.

Another key strength of the tool is that it takes a multi-stakeholder, actor-oriented approach. This is to make sure that perspectives from a wide variety of actors are included, and that the recommendations that are based upon such an approach take the perceived reality of these actors into account. Interventions that follow from these recommendations are then more likely to be accepted and supported by the relevant actors.

An example from this particular study that shows how different perspectives have been taken into account is the identified problem around access to finance for small and medium enterprises in the agricultural sector. It was brought up that these firms lack the skills to right good quality business plans. It was however also suggested that investors lack the skills to assess these business plans, particularly those that involved businesses in the agricultural sector

The analysis that followed the structural-functional assessment summarizes the findings and identifies the most pressing issues. Its main value is that this step shows how different issues are interrelated. And that it looks

for systemic weaknesses that are manifested in different functions. As the issues that are identified as being most important could well differ between researchers, future applications of the tool could benefit from a multi-disciplinary team for triangulation purposes. Another possibility is to invite stakeholders to share their opinions on the selection of most pressing issues.

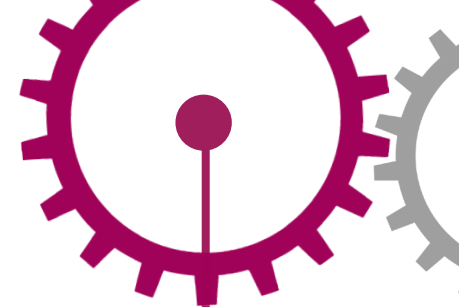
Showing how different issues interrelate and share similar causes is valuable as it allows for the formulation of recommendations that deal not with individual problems but their shared underlying causes. The interventions that follow from these recommendations do thus not target to solve individual problems, but aim to strengthen the problem solving, or innovation capacities of the system. The recommendations that have been formulated in this research illustrate this. For instance, none of the recommendations specifically deals with the issue of poor potato seed quality, there are however several recommendations that can contribute to this issue, for example recommendation #1 aims to strengthen the research system so that it can perform trials with protected varieties and advice the government on this issue, at the same time, recommendation #2 aims to stimulate coalition forming through which demand for knowledge and institutional change on this issue can be articulated.

A different application of the proposed tool is to use it as an impact measurement tool, to analyse the performance of a specific innovation intermediary. The tool can be used to make a snapshot prior to and after deployment of interventions. Difficulties might arise in attributing change to the activity of the intermediary, but it can still be a valuable addition to more traditional impact measurement.

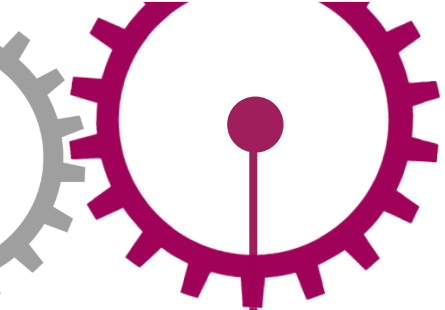


Table 10.1- List of functions, indicators and diagnostic questions. Based on the findings of this research, as well as on previous work of Wieczorek *et al.* (2012), and BoP literature.

Function	Indicator	Diagnostic questions
F1: Entrepreneurial Activity	BoP involvement	Is the BoP involved as producer, employee, entrepreneur, consumer? Details of involvement (e.g. size of producer?)
	BoP entry	Extent to which BoP can be involved, which barriers to entry exist e.g. high initial investment, bureaucratic burden etc.?
	Business plan development	Are there sufficient (in terms of quality and quantity) business plans?
	BoP business model	In what ways do companies engage with the BoP e.g. contract farming?
F2: Knowledge development	Sources of knowledge	Main producers of knowledge, what share is domestic vs international?
	Focus of knowledge development	(top-down/push vs bottom up/pull)? Does it cater needs of BoP, i.e. does the BoP profit from it in any way?
	Research capacity	Is the knowledge that is created of sufficient quantity and quality?
	Research collaboration	Is there collaboration between different producers of knowledge, between producers and users?
	Competitiveness (conflict of interests)	Is there a healthy level of competitiveness among knowledge producers, or is it too fierce in terms of possessiveness and conflicting interests?
F3: Knowledge dissemination	IP protection	Is there some form of IP protection by law / agreement / trust?
	Focus of dissemination	(top-down/push vs bottom up/pull)? Is it aimed at poverty alleviation?
	(Extension) capacity	To what extent is knowledge disseminated (also awareness campaigns etc.)
	Method of dissemination	What methods are used, are these appropriate?
F4: Guidance of Search	Targets	What targets are being set, are these realistic, do they include strategy on how to realize these targets?
	Structured approach	Is there a structured, nation-wide approach?
	Recognized constraints	What are the main constraints recognized, is there unity among actors in which constraints are recognized?
	Governmental focus	What is the focus of government policy? - Does it include poverty alleviation strategies?



F5: Market Formation	Private sector focus	What is the focus of private sector strategy? How do they contribute to poverty alleviation?
	International trade agreements	To what extent do international trade agreements hamper or promote market formation?
	Institutional barriers	What institutional barriers exist to market formation?
	Institutional incentives	What institutional incentives exist to market formation? E.g. Tax benefits, subsidies etc. Are there specific incentives for poverty reducing initiatives?
	Market premium	Are there opportunities to get market premium (domestic or international)? (e.g. on quality, organic / sustainable production method?)
	Certification	Are there well functioning certification schemes in place?
	Instruments for market formation	What instruments for market formation exist? (e.g. challenge funds, public-private partnerships, incubators), any of these specifically pro-poor?
F6: Mobilization of resources	Cost of money lending	What are interest rates on loans from banks, micro-finance, family etc. ?
	Investments	What is the size and nature of investments?
	Investment security	To what extent are investments secure (e.g. Risk of expropriation, natural disasters, war etc.)
	Access to capital	To what extent do (BoP)-businesses have access to capital? (e.g. what kind of collateral do they need, is the procedure complex, etc.)
F7: Creation of legitimacy	Business plan assessment	Do investors have sufficient capabilities to assess business plans?
	Public spending	What is the share of public spending, is it on the right things?
	Consumer confidence	Do sector outputs have good reputation (e.g. Food safety concerns / quality etc.)
	Commitment of government	Does the government show commitment to the advancement of the sector?
	Commitment of private sector	Does the private sector show commitment to the advancement of the sector?
	Coalition forming	Is there coalition forming? (e.g. Farmer associations, product associations, etc.?)



CONCLUSION

11

In a world where more than half of the population is poor, there is a need for pro-poor, or *inclusive* innovation. This requires broad support from governments, companies and other organizations around the world. It is not only about making products and services for the poor, but also about enhancing innovative capacity at the Base-of-the-Pyramid. A growing number of innovation intermediaries looks to support inclusive innovation by operating at the systems level.

These intermediaries seek to develop interventions designed to fill the institutional voids and overcome the barriers that are experienced by private enterprises in BoP markets, in other words, they seek to strengthen the inclusive innovation system. Interventions that aim to strengthen inclusive innovation systems need to be context-specific. Therefore a methodology to assess current status of innovative capacity, and identify opportunities for intermediation is called for.

The research question that has been addressed is: *How can innovation intermediaries identify opportunities to strengthen inclusive innovation systems?*

The aims of this research were to develop a tool for assessing systemic gaps that can be addressed by intermediaries and to evaluate the applicability of such a tool by performing an analysis of the agro-food sector of Vietnam.

The tool that has been developed consists of

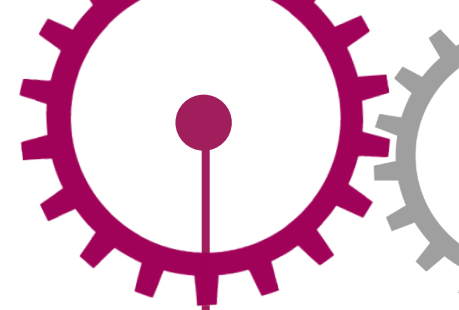
five steps: 1) define systemic boundaries; 2) identify key informants; 3) perform structural-functional assessment; 4) perform analysis; and 5) formulate recommendations. The methodology for the structural-functional assessment has been inspired by the Functions of Innovation Systems approach. The functions are used as a guide to search for systemic deficiencies that hamper innovative efforts.

The applicability of the tool has been evaluated by applying it to agro-food sector of Vietnam. A specific interest was taken in the potato sector to delineate search efforts. Use of the tool resulted in a total of nine recommendations for intermediaries. These recommendations do not aim to induce interventions that tackle individual problems, instead, the recommendations are meant as a basis for interventions that aim to strengthen the innovation, or problem solving, capacity of the system.

The use of the tool was evaluated by listing

some of the strengths and weaknesses of this tool that were experienced. The main strengths of the tool are: it encompasses many facets of innovation; it has an open character allowing for data richness, while at the same time providing guidance in search and handling of data; its multi-stakeholder actor-oriented approach ensures that different perspectives are taken into account, this could also improve the support of system actors for the interventions that follow from this analysis; and finally, use of the tool contributes to the understanding of how the identified issues are interrelated.

Application of the tool also presented some pitfalls, of which the most important are: the list of functions is not and cannot be exhaustive, therefore there is a risk of not being able to identify systemic problems that fall outside these functions; and secondly, the functions are broadly defined, results of their use can therefore strongly depend on the interpretations and preferences of the researcher.



On the basis of tool application some suggestions have been made to strengthen the tool, and to make it less dependent on the individual researcher. For each function a number of indicators and accompanying diagnostic questions have been proposed. This list should be extended and approved upon through continuous application and reflection.

This research has shown how a tool, which is based on the Functions of Innovation Systems approach, can be used as a structural approach to come to context specific recommendations for innovation intermediaries. Intermediaries are targeted because they are in a unique position to, from a relatively impartial position, strengthen inclusive innovation systems. Companies can play an important role as well, yet interventions are required at the systems level, and private enterprises can be expected to behave too opportunistic for systemwide interventions. Governments of developing countries generally lack the capacity and resources to design and implement systemic interventions.

The field of innovation systems studies has progressed considerably over the last decades. It is a widely accepted framework to conceptualize the dynamics of innovation. However, inclusive innovation, which refers to the innovation processes that specifically address the needs of the BoP, is such a distinct endeavour that it requires to conceptualize its dynamics in a different way. Therefore this research has introduced the notion of Inclusive Innovation Systems. In contrast to conventional innovation systems, an IIS takes the distributive effects of innovation into account, and it has different goals and priorities. Poverty reduction is a main concern in any IIS.

At the same time, progress that has been made in 'ordinary' innovation systems research should not be overlooked. Instead of building new approaches from the ground up, this research has made use of theory that has been elaborated upon by different scholars in different settings. The Functions of Innovation Systems approach has provided a strong basis for a useable tool for innovation intermediaries.

An Inclusive Innovation System differs from other innovation systems in its purpose, which is to induce inclusive innovation. By definition, a well functioning inclusive innovation system contributes to the wellbeing of the poor. In contrast, other 'ordinary' well-functioning innovation systems can contribute to growth that cause deeper poverty and greater inequality.

Inclusive innovation is not charity. Yet it requires the rearrangement of incentives and rewards in such a way that the poor profit from firm activity, and vice versa. In a well-functioning system companies have a good understanding of the needs of the BoP which is a prerequisite for serving the poor while making profits; people at the BoP have access to employment or can pursue entrepreneurial opportunities; and the previously underserved get access to better products at a better price.

The task of innovation intermediaries in such systems is to ensure that the interests of both companies as well as those of the BoP are served through the same activities. They must therefore identify and take away deficiencies that prevent such activities to take place, and create an environment in which opportunities for such activities can arise.



DISCUSSION

12

This chapter reflects on the research findings and the methods that were used to come to these findings. Some of the limitations of this study are discussed, and directions for further research are briefly outlined.

The tool has been applied to the agro-food sector of Vietnam. Vietnam is not necessarily a typical developing country. It is one of only few communist states, which influences market dynamics in sometimes unexpected ways. Vietnam is also doing reasonably well; this is reflected by the change in status from low to middle income status by the World Bank. Still, many people that live in Vietnam are still poor and do belong to the BoP. The fact that Vietnam has a communist government must not matter either, as part of the proposed tool is to inform intermediaries on the context, whether it be a communist government or no functioning government at all. Experiences from this inclusive innovation system, may serve as a source of inspiration for other inclusive innovation systems, as they will often face the same types of problems and challenges.

The tool has only been applied in a single instance, and by a single researcher. On the basis of this research alone, one cannot make judgments regarding supremacy or inferiority of this tool in comparison to others. One can only, based on the experience of applying it,

make statements based on that experience, about what aspects of this approach were experienced as being valuable, and which, to the opinion of the researcher, require adaptation or consideration.

However, the findings of this research can still be indicative for intermediaries on how such a tool can be used, and what kind of findings can be expected from it. The research presented some potential pitfalls of this approach, yet this should not withhold intermediaries from using the tool. They are challenged to improve the tool and to better fit it to their needs. Simultaneously scholars should elaborate on the notion of Inclusive Innovation Systems, and further integrate the BoP- and intermediary theory with innovation systems theory.

Use of the tool will also generate an increasingly extensive understanding of inclusive innovation system dynamics, which in its turn should be used to improve both tool and theory.

Understanding system dynamics could for instance point to feedback loops, in which

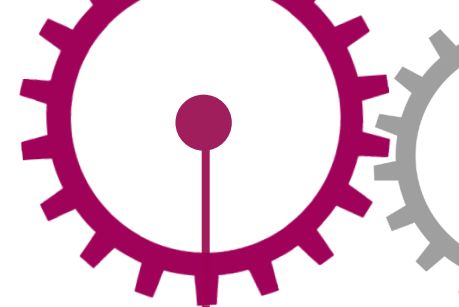
strengthening one function has positive impact on other functions, which in turn strengthen the former, creating self strengthening systems. The ultimate task of innovation intermediaries should be to make itself obsolete.

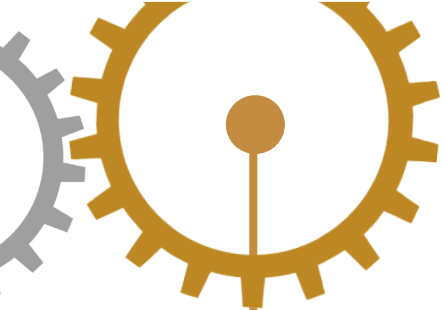
Further research should also point out if the tool can be used across different sectors, or that sector specific approaches need to be developed. One way of making the approach sector specific is by developing sector specific indicators and diagnostic questions.

Finally, systems theory can be of great value to inclusive innovation. Current research on innovation systems is largely de-linked from the poverty debate, and does not sufficiently take into account who benefits and who pays the price of innovation.

Systems theory can also be valuable for intermediaries. Scholars from this field therefore do have to increase their efforts in making their theories more useable and applicable by practitioners. All too often scholars, even those that study intermediaries, arrive only at policy rec-

ommendations. In doing so, they overestimate the capabilities, responsibilities, and in some cases the willingness of governments. Scholars from the fields of intermediaries and innovation systems preach a better match between producers and users of knowledge, yet many of the advancements in science they contribute to, are only aimed at policymakers and lack practical use, if they talk the talk, they have got to walk the walk.





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REFERENCES

- AU-NEPAD. (2010). *African Innovation Outlook 2010. Innovation* (p. 166). Pretoria.
- Alphen, K.V., Hekkert, M. P., & Sark, W. G. J. H. M.V. (2008). Renewable energy technologies in the Maldives — Realizing the potential. *Renewable and Sustainable Energy Reviews*, 12, 162–180.
- Altenburg, T. (2008). Building inclusive innovation systems in developing countries - why it is necessary to rethink the policy agenda. *IV Globelics Conference, Mexico City* (pp. 1–17).
- Anthony, S. D. (2011). *The Little Black Book of Innovation: How It Works, How to Do It* (p. 304). Harvard Business Review Press.
- Arocena, R., & Sutz, J. (2005). *Innovation systems and developing countries*. Universidad de la Republica, Uruguay.
- Batt, P. J. (2002). Final report for Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) on the market for seed potatoes, fresh potatoes and processed potato products in Vietnam. Hanoi.
- Batt, P. J. (2003b). Examining the performance of the supply chain for potatoes in the Red River Delta using a pluralistic approach, *Supply Chain Management: an International Journal*, Vol 8 (5): 442–454.
- Batterink, M. H., Wubben, E. F. M., Klerkx, L., & Omta, S. W. F. (Onno). (2010). Orchestrating innovation networks: The case of innovation brokers in the agri-food sector. *Entrepreneurship & Regional Development*, 22(1), 47–76.
- Bergek, A. (2002). *Shaping and exploiting technological opportunities: the case of renewable energy technology in Sweden*. Chalmers University of Technology.
- Carlsson, B., & Stankiewicz, R. (1991). On the nature, function and composition of technological systems. *Journal of Evolutionary Economics*, 1(2), 93–118.
- Carlsson, Bo, Jacobsson, S., Holmén, M., & Rickne, A. (2002). Innovation systems : analytical and methodological issues. *Research policy*, 31(2), 233–245.
- Christensen, L. J., Parsons, H., & Fairbourne, J. (2010). Building Entrepreneurship in Subsistence Markets: Microfranchising as an Employment Incubator. *Journal of Business Research*, 63(6), 595–601.
- Dalziel, M. (2010). Why do innovation intermediaries exist. *DRUID Conference, London, UK*.
- Dietrich, M. (2009). Achieving Scale and Sustainability in a Social Enterprise at the Base of the Pyramid – Case of, 1–152.
- Edquist, C., & Hommen, L. (1999). Systems of innovation: theory and policy for the demand side. *Technology in society*, 21(1), 63–79.
- Evans, P. (1998). Transferable lessons? Re-examining the institutional prerequisites of East Asian economic policies. *Journal of Development Studies*, 34:6, 66–86
- Freeman, C. (1995). The 'National System of Innovation' in historical perspective. *Cambridge Journal of economics*, (March 1993), 5–24.
- George, G., McGahan, A. M., & Prabhu, J. (2012). Innovation for Inclusive Growth: Towards a Theoretical Framework and a Research Agenda. *Journal of Management Studies*, (June), no–no.
- Gradl, C., & Jenkins, B. (2011). *Tackling Barriers to Scale : From Inclusive Business Models to Inclusive Business Ecosystems*. Ecosystems (p. 36). Cambridge, MA: the CSR Initiative at the Harvard Kennedy School.
- Gradl, C., & Knobloch, C. (2010). *How to Develop Business and Fight Poverty* (p. 92).
- Hahn, R. (2008). The Ethical Rational of Business for the Poor – Integrating the Concepts Bottom of the Pyramid, Sustainable Development, and Corporate Citizenship. *Journal of Business Ethics*, 84(3), 313–324.
- Hall, A. (2005). Capacity development for agricultural biotechnology in developing countries: an innovation systems view





of what it is and how to develop it. *Journal of International Development*, 17(5), 611–630.

Hart, S. L., & Christensen, C. M. (2002). The Great Leap: Driving Innovation From the Base of the Pyramid. *MIT Sloan Management Review*, Fall, 51–56.

Hekkert, M., Suurs, R., Negro, S., Kuhlmann, S., & Smits, R. (2007). Functions of innovation systems: A new approach for analysing technological change. *Technological Forecasting and Social Change*, 74(4), 413–432.

Hekkert, M., Alkemade, F., Negro, S., Suurs, R. and Van Alphen, K. (2010) *Innovatiesysteemanalyse: een methode voor het monitoren/evalueren van transitieprocessen*, Universiteit Utrecht, Departement Innovatie en Milieuwetenschappen.

Howells, J. (2006). Intermediation and the role of intermediaries in innovation. *Research Policy*, 35(5), 715–728.

Hue, D T, & Batt, P. J. (2009). The Economic Impact on Smallholder Potato Farmers in the Red River Delta, Vietnam, from the Use of Superior Quality Seed, 171–180.

Hue, Dang Thi. (2008). Supply of Affordable High Quality Potato Seed for Potato Production in the Red River Delta of Vietnam, (November).

International Finance Corporation. 2011.

“Accelerating Inclusive Business Opportunities: Business Models that Make a Difference.” Washington, DC: IFC.

Intarakumnerd, P., Chairatana, P., & Tangchitpiboon, T. (2002). National innovation system in less successful developing countries: the case of Thailand. *Research policy*, 31(8-9), 1445–1457.

Jenkins, B., Ishikawa, E., Geaneotes, A., Baptista, P., & Masuoka, T. (2011). *Accelerating Inclusive Business Opportunities: Business Models that make a Difference*. Business (p. 44).

Johnson, A. (2001). Functions in innovation system approaches. *Nelson and Winter Conference, Aalborg, Denmark* (pp. 12–15).

Johnson, B., Edquist, C., & Lundvall, B. Å. (2003). Economic development and the national system of innovation approach. *First Globelics Conference*.

Karnani, A. (2006). The Mirage of Marketing to the Bottom of the Pyramid: How the Private Sector Can Help Alleviate Poverty. *Business*, 49(August), 90–112.

Karnani, A. (2009). Romanticising the poor harms the poor. *Journal of International Development*, 21(1), 76–86.

Kilelu, C., Klerkx, L., & Leeuwis, C. (2011). Beyond Knowledge Brokerage: An Exploratory Study of Innovation Inter-

mediaries in an Evolving Smallholder Agricultural System in Kenya. *Research Into Use, Discussion*.

Klerkx, L., & Leeuwis, C. (2008). Balancing multiple interests: Embedding innovation intermediation in the agricultural knowledge infrastructure. *Technovation*, 28(6), 364–378.

Klerkx, Laurens, & Gildemacher, P. (2012). The Role of Innovation Brokers in Agricultural Innovation Systems. *Agricultural Innovation Systems: An Investment Sourcebook* (pp. 221–230).

Klerkx, Laurens, & Leeuwis, C. (2009). Establishment and embedding of innovation brokers at different innovation system levels: Insights from the Dutch agricultural sector. *Technological Forecasting and Social Change*, 76(6), 849–860.

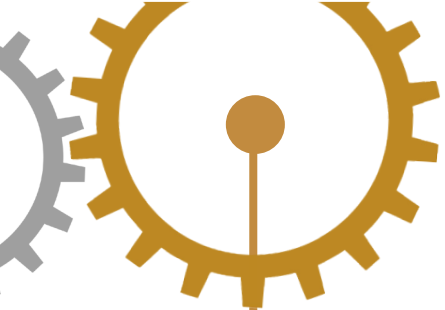
Kubzansky, M., Cooper, A., & Barbary, V. (2011). *Promise and Progress: Market-Based Solutions to Poverty in Africa*. Work (p. 236).

van Lente, H., Hekkert, M., & Smits, R. (2003). Roles of systemic intermediaries in transition processes. *International journal of*, 7(3), 1–33.

Linh, N. V. (2001). *Agricultural Innovation: Multiple grounds for technology policies in the Red River Delta of Vietnam*. Wageningen University



- London, T., & Hart, S. L. (2004). Reinventing strategies for emerging markets: beyond the transnational model. *Journal of International Business Studies*, 35(5), 350–370.
- Lundvall, B. (1988). Innovation as an interactive process: from user-producer interaction to the national system of innovation. *Technical change and economic theory*, 1.
- Markard, J., & Truffer, B. (2008). Actor-oriented analysis of innovation systems: exploring micro–meso level linkages in the case of stationary fuel cells. *Technology Analysis & Strategic Management*, 20(4), 443–464.
- Minot, N., Baulch, B., & Epprecht, M. (2006). *Poverty and inequality in Vietnam: spatial patterns and geographic determinants*. International Food Policy Research Institute.
- Poulton, C., & Dorward, A. (2010). The future of small farms: New directions for Services, institutions, and intermediation. *World Development*, 223–251.
- Prahalad, C. K. (2005). *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits*. Upper Saddle River, NJ: Wharton School Publishing.
- Prahalad, C. K. (2011). Bottom of the Pyramid as a Source of Breakthrough Innovations. *Journal of Product Innovation Management*, 29(1)
- Seelos, C., & Mair, J. (2007). Profitable Business Models and Market Creation in the Context of Deep Poverty: a Strategic View. *The Academy of Management Perspectives ARCHIVE*, 21(4), 49–63.
- Simanis, E., & Hart, S. L. (2008). *The Base of the Pyramid Protocol: Toward Next Generation BoP Strategy* (p. 57). Cornell University.
- Smits, R., & Kuhlmann, S. (2004). The rise of systemic instruments in innovation policy. *Journal of Foresight and Innovation Policy*, 1(2), 4–32.
- Spielman, D. J. (2005). *Innovation systems perspectives on developing-country agriculture: A critical review*. Food Policy. International food policy research institute (IFPRI). International service for national agricultural research (ISNAR) division.
- Suurs, R. (2009). *Motors of Sustainable Innovation: Towards a theory on the Dynamics of Technological Innovation Systems*. Utrecht University
- Tung, P.X. (2000). Potato Production in Vietnam, 11 p. <http://www.eseap.cipotato.org/MF-ESEAP/FI-Library/Pot-Vietnam.pdf>
- Viswanathan, M., & Sridharan, S. (2009). From subsistence marketplaces to sustainable marketplaces: a bottom-up perspective on the role of business in poverty alleviation. *Ivey Business Journal*, 73(2).
- Wieczorek, A. J., & Hekkert, M. P. (2012). Systemic instruments for systemic innovation problems: A framework for policy makers and innovation scholars. *Science and Public Policy*, 39(1), 74–87.
- Wieczorek, A. J., Hekkert, M., & Smits, R. (2010). Systemic policy instruments and their role in addressing sustainability challenges. *Sustainable Development*, 1–34.
- World Resource Institute, & International Finance Corporation. (2007). *The next 4 billion: Market size and business strategy at the base of the pyramid* (p. 162). Washington DC: World Resources Institute, International Finance Corp.



ANNEX A - CHECKLIST

The checklist is partly based upon the work of Wieczorek *et al.* (2012). These questions were not systematically addressed, but rather used as a guide of topics. The interviewees were specifically asked to give examples to illustrate their experiences.

General

- What are the main activities of your organization?
- How do your activities relate to the potato / agro-food sector?

Actors:

- Who are the main actors in the agro-food / potato sector?
- Which governmental bodies formulate, monitor and enforce policies for the agricultural sector?
- Which are of specific importance to the potato sector?

Interaction:

- How does your organization collaborate with..
 - o Knowledge institutes
 - o NGO's
 - o Financial sector
 - o Private sector
- Can you give an example of such collaboration?
 - o Who initiated these collaborations?
 - o What are the main motives for these collaborations?
 - o What are major advantages of these cooperations?

Institutions:

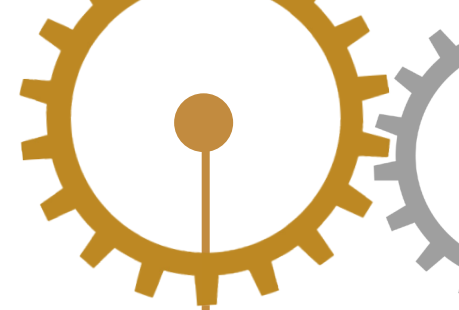
- What are the main institutions (hard/soft) that drive/inhibit innovation / your activity?
- What are the most important changes in agricultural policy over the last 5 years?
- Are there any policies specifically designed for potato-industry, e.g. tax incentives / subsidies / standards?
- Do policies tend to focus on agricultural inputs, technological inputs, trade?

Infrastructure:

- Is the physical/knowledge/financial infrastructure sufficiently conducive to entrepreneurial activity?

Function I: Entrepreneurial activities

- How can the business environment be characterized?



Function 2: Knowledge development

- Who are the main sources of knowledge in the agro-food sector?
 - What are the main sources of innovation (foreign vs local, public vs private, startup vs SME vs MNC)?

Function 3: Knowledge dissemination

- How do different producers and users of knowledge collaborate?
 - By what channels do innovations diffuse in the agrosector, and which actors are involved?

Function 4: Guidance of the search

- Are there specific goals set (short, medium, long term) for the potato industry? –What are they?

Function 5: market formation

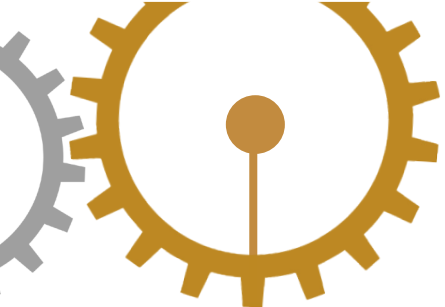
- Are there policies or programs in place that support market formation, e.g. subsidies or tax exemptions?

Function 6: Resources mobilization

- Is there public funding for research and development in agricultural sector / potato sector?
- To which parties (research institutes, government bodies, private parties) do these funds go?

Function 7: Creation of legitimacy

- Are there any interest groups or unions that seek to influence policymaking?



ANNEX B - LIST OF SOURCES

#	Organization	Type of organization
1	SNV	NGO
2	Helvetas	NGO
3	ACIAR	Research – foreign
4	Center for Agricultural Policy Consulting (CAP)	Research – public
5	Center for Agrarian Systems Research and Development (CASRAD)	Research – public
6	National Agriculture Extension Center (NAEC)	Extension
7	Royal Dutch Embassy	Other
8	Oxfam Novib	NGO
9	IDH Sustainable Trade	NGO
10	Hanoi University of Agriculture	Research – University
11	Department of Crop Production	Government – Ministry of Agriculture and Rural Development
12	Than Phat Technology	Private – trader
13	PepsiCo	Private – producer
14	Fresh Studio	Private - consultancy
15	Markets4Poor	Finance – Challenge Fund
16	Dalat Gap	Private - Seed producer
17	Potato Production Station	Private - Seed producer
18	Hung Yen – Department of Agriculture and Rural Development	Government – Local
19	Hung Yen – Extension	Extension – Local
20	Hung Yen – Department of Plant Protection	Extension – Local
21	Hai Duong Trader	Private – Trader
22	Vinh Hoa Cooperative	Farmer
23	Trung Nghia Cooperative	Farmer



This thesis was written by Benjamin van der Hilst (1986) for the attainment of the Master degree Science and Innovation Management, at the University of Utrecht.

The work comprises a theoretical reflection of BoP, intermediary and innovation literature. It introduces the notion of Inclusive Innovation Systems and a tool to analyze these systems. This tool can be of use for intermediaries that wish to design context-specific interventions in new to them countries or sectors.

The applicability of the tool is tested by applying it to the agro-food sector of Vietnam. Based on this experience, suggestions for improvement and further research are given.



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