UNIID Africa:
An Investigation of University-Informal, Marginalised Community Interactions for Livelihoods Improvements in Botswana

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Introducing the UNIID Africa Project

With the economic crises, contestation about the role of universities in industrial and other innovation processes has shifted. The emphasis in the past has tended to be on whether and how universities should support economic development and growth through industrial innovation processes, and what research, new knowledge, and technology can contribute, particularly in relation to high-technology formal sectors. Much research has centred on how to enhance technology transfer, establish effective incubation facilities, support patents and licencing, or other forms of profitable commercialisation of intellectual property.

Such a discourse tends to obscure a more inclusive and developmental form of engagement and interaction that could contribute to innovation and economic development. In countries that belong to the Organisation for Economic Co-operation and Development (OECD), the recent economic crisis has shifted debate from innovation for global competitiveness, to consider how to mobilise shrinking resources to best address growing inequality, poverty, and unemployment. In emerging economies, there are growing claims that science, technology, and innovation-led growth can in fact result in higher levels of poverty and inequality *within* a country.

Thus, while in the recent past the link between innovation and growth was indivisible, recently a new debate has emerged, centred on the connection between innovation and social inclusion. By inclusive development, we mean

> …development that reduces poverty, enables all groups to create opportunities, share the benefits of development and participate in decision-making (UNDP, n.d.).

Indeed, in transitional and developing contexts like those in southern Africa, for many years, universities were challenged to establish a new social compact where they became key agents for inclusive social and economic development. Greater emphasis is accorded to the roles the knowledge work of university academics play in poverty reduction and the ability of all social groups to create opportunities, share the benefits of development and participate in decision-making.

New study on innovation in southern Africa

Such an emphasis drives the focus of the present study, *Universities and Innovation for Inclusive Development (UNIID) Africa*, funded by the International Development Research Centre (IDRC). It seeks to build a stronger African empirical research base in collaboration with partners in four SADC countries - Botswana, Malawi, South Africa and Tanzania - as well as Nigeria and Uganda. The UNIID-Africa project seeks to address the limited attention paid to how universities contribute to innovation for inclusive development, specifically to innovation activities that provide livelihoods to the excluded and disadvantaged.

The project aims to make a conceptual and methodological contribution to research on innovation, development, and higher education. It challenges the focus of innovation studies - typically on science and technology, radical innovation, and economic development in formal sectors - and extends the remit to encompass innovation that is incremental, takes doing, using, and-interacting modes, and is based in informal settings. In turn, the tendency of development studies to focus on top-down development is challenged in favour of inclusive development that focuses on participation by the marginalised as active agents to ensure sustainable benefits.

Linking knowledge generation and the public good with innovation
Similarly, the innovation studies literature is often marked by a conceptual myopia towards the substantive knowledge-generation role of universities and their contribution to the public good. A corresponding myopia exists within the higher education literature, which has insufficient accounts of the role of universities in innovation, technology transfer, and diffusion toward economic development. The project seeks to overcome this impasse by linking the knowledge imperatives of universities in relation to the public good and social justice, with those of innovation and technology transfer.

Based on such ambitious conceptual integration, the research aims to conduct empirical research in African universities, in order to make innovation that may be taking place visible; to make the nature of university-community interactions explicit; and to highlight the university as an actor in the innovation system engaging the community. In terms of higher education governance, it addresses issues of accountability to social needs, and promoting scholarship that is more socially and economically responsive to (local) contexts. In terms of the implications for higher education management, the issue is how to create a stronger coherence between research, teaching and community engagement. Finally, the research aims to identify what kinds of incentives will be appropriate as drivers and to address bottlenecks.

Methods and mapping
An interlocking set of research and policy oriented activities commenced in October 2012, founded on a survey methodology to map forms of university interaction with the full range of possible social partners in each country – whether firms, farmers, communities, government, or social organisations. Such a process will provide an overview of the main kinds of partners, the main types of relationships, channels of interaction, the outcomes and benefits of interaction and the main barriers and blockages, across distinct types of institution in each higher education system. The analysis will draw on interviews with senior university management and academics, as well as analysis of institutional documents to understand the governance and management conditions within universities that support diverse patterns of interaction.

The mapping will provide a rich descriptive foundation of existing interactive practice within the universities in a national system of innovation, an empirically contextualised baseline for investigating specific cases of innovation for inclusive development.

We plan a set of comparative case studies in which universities and communities interact to innovate in informal settings to enhance livelihoods. For example, adaptations and diffusion of cell phone technology to inform small scale farmers' harvest and marketing practices or women market stallholders' cooperative practices; or exploiting local knowledge of local conditions in collaboration with university knowledge to establish commercially viable enterprises.

Comparing case studies within and across country contexts will provide an evidence base of the facilitators of and constraints on innovative and interactive practice in sectors critical to the informal livelihoods of marginalised communities. Such analysis allows for policies to be informed by insights from the local level and by the priorities of the poor.

Together, the mapping of university practice and the in-depth exploration of innovation in informal settings will allow us to interrogate critically the policy options and interventions typically proposed

in the innovation systems literature. The research ultimately aims to inform better targeted policy adaptation and formulation in universities, and amongst the higher education, science and technology, and economic development communities in each country, towards inclusive development.

This report presents an exploration in Botswana, of universities' roles in innovation in informal settings to enhance community livelihoods, through analysis of case studies in one university.

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Acronyms

BCA - Botswana College of Agriculture

BGCSE - Botswana General Certificate of Secondary Education

CBNRM – Community Based Natural Resource Management

CKGR – Central Kalahari Game Reserve

DFID – Department for International Development

IDRC – International Development Research Centre

KyT – Kgetsi ya Tsie

NGO – non-governmental organisation

NSI – National System of Innovation

ORD – Office of Research and Development – if used

PMS – Performance Management System

UB – University of Botswana

UNDP – United Nations Development Programme

UN GEF – United Nations Global Environmental Facility

UNIID - Universities and Innovation for Inclusive Development

Introducing the UNIID Botswana Project

The aim of this Universities and Innovation for Inclusive Development (UNIID) report is to discuss findings from a three year research study that examined the ways in which academics, working at universities in Botswana interact with community actors in marginalized, informal communities to foster inclusive development in Botswana. More particularly, we explored how public universities interact with informal community actors, who are traditionally marginalized and experience various livelihood challenges, to help these individuals innovate to address their respective livelihoods issues. Such an investigation can inform the larger questions about the role universities can potentially have in fostering inclusive social and economic developments at the local, national, and regional levels.

Botswana is an early democracy and newly emerging country. Quite remarkably, Botswana has transitioned from being one of the poorest countries in the world at independence in 1966 to its current position as a middle income country forty eight years later. Much of this movement has taken place because of Botswana's reputation for success in democratic governance and economic growth. Our research is very much an effort to contribute to this success, and support future government and university-based initiatives.

Our research explores the role Botswana universities play in the national innovation system and in inclusive social and economic development. We consider how universities can contribute to informal and marginalized communities' innovations while also honouring and responding to the needs of people who are traditionally marginalised. More particularly, we explicate the nature of university-community interactions while contributing to current national and university-based efforts. To clarify the role of universities in Botswana's national innovation system, our study asks the following question:

> How are university actors engaging with informal, marginalize communities to enable innovations that support inclusive development? What factors enable/constrain such interactions?

To answer this question, we surveyed the national system of innovation, moved to examining the country's higher education context, and then traced three particular university interactions in three different informal, marginalised communities in Botswana (see Figure 1 below). While in some ways our study is hierarchical—moving from the nation, to the higher education context to particular communities—it is important to note that Botswana's higher education system is nested within Botswana's national system of innovation. Similarly, the three university-community interactions involve a university that is, of course, part of the higher education system and are contributing to Botswana's national system of innovation.
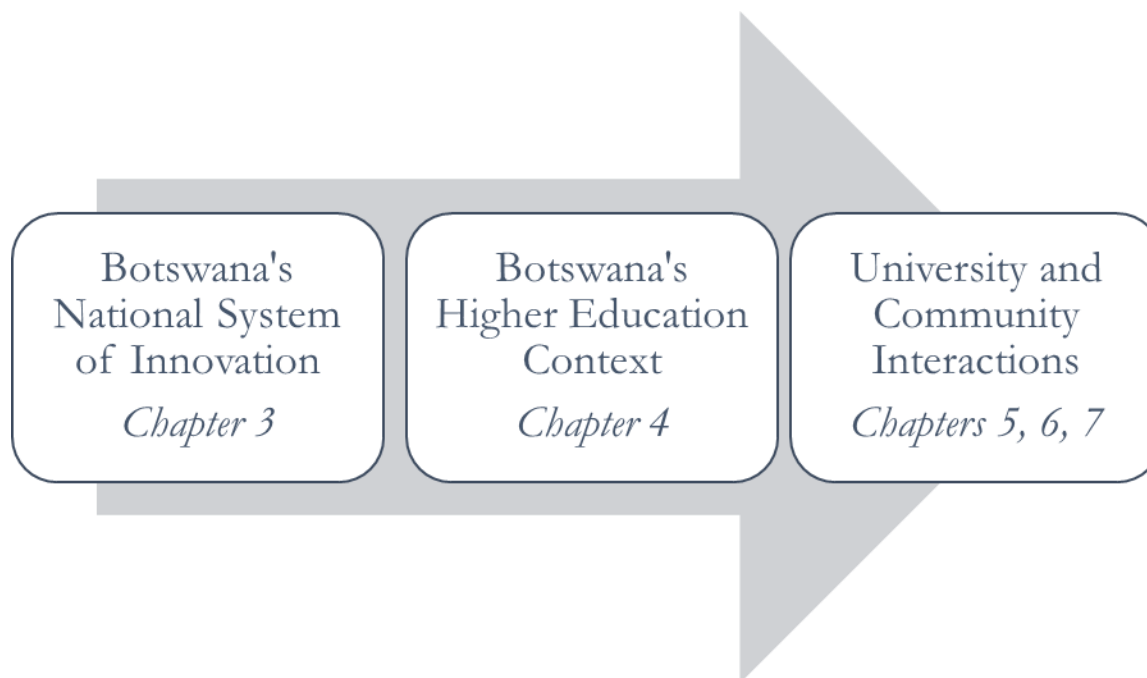
Figure. *Research overview*

While our mandate was to explore, more broadly, how universities play a role in Botswana's national system of innovation, two early findings helped shape the direction of the study.

First, our analysis of Botswana's national innovation system made known that recent national policies have focused heavily on public sector growth—not on the livelihood needs of marginalised people or those in the informal sector. While there has indeed been economic growth in Botswana, our analysis showed there have also been high levels of economic inequality, particularly a disparity between those in rural communities versus those in urban centres, and those in the formal sector versus those in the informal sector.

Second, our analysis of Botswana's higher education system highlighted how, by and large, university interactions have overlooked interacting with marginalised groups, focusing instead on working with other universities, government departments, firms, NGOs, and private enterprises.

Learning that limited attention has been given to marginalised peoples both at the national level (e.g., policies, structures, supports), and in university interactions, again, helped direct our research. We, in turn, explored the ways that university actors are engaging with marginalised community actors, particularly those in the informal sector. We were specifically motivated to understand the type of engagements university actors were involved in with marginalised communities, how they respond to these communities' livelihood issues, how these interactions are shaped by institutional, local, and national organisational arrangements and interface structures, the types of innovation that emerge from these interactions, the ways that community actors participate in the relationships, the knowledges and skills transferred through the interactions, as well as the possible outcomes and benefits of such interactions, and, finally, the ways in which these interactions are either enabled or constrained by a variety of factors. Given our interest in issues of marginalisation, we were also motivated to examine the ways in which university actors were interacting with different marginalised community groups in Botswana. To do this, we examined interactions between

university actors and three marginalised groups in Botswana: the ethnically marginalised San people; disadvantaged women; and disadvantaged youth. Findings from these investigations will be discussed in Chapters 5, 6, and 7 respectively.

Structure of the report

This chapter has introduced the overall aim of the project, which is, again, to better understand how universities are interacting with informal, marginalised communities in Botswana to support these communities' innovations – innovations that the communities are in the process of developing or have developed to address the various livelihoods challenges they encounter. Gaining a better understanding of such interactions should help us better understand how universities in Botswana, or more broadly in Southern Africa, can play a role in fostering inclusive development. Given these aims, this report is structured in the following way:

Chapter 1 presents our analytical framework, tracing current scholarship in the field and making explicit our understanding of key terms.

Chapter 2 presents our methodology. In this chapter, we detail this study's overall research design, showing how we moved from examining the national context, to mapping patterns of interaction in Botswana's higher education context, to analysing three specific case studies of university-community interactions. We also make explicit the variety of research methods used.

Chapters 3 through 7 are devoted to our analysis. Chapter 3 offers an overview of Botswana's national system of innovation. In this chapter, we highlight how—despite an increase in economic development—Botswana is characterised by economic disparity, and by limited/inadequate government structures supporting marginalised peoples. We also argue that innovation efforts in Botswana have focused on national efforts in the formal sector (particularly in support of major industries)—as opposed to local efforts in the informal sector.

Chapter 4 examines the role the country's universities play in Botswana's national system of innovation. Focusing on the University of Botswana (UB), the chapter traces a variety of interactions between university and community actors. We demonstrate how university-community interactions frequently happen outside of official institutional channels (e.g., without being accounted for or officially endorsed by the university). Further, we highlight how, by and large, university interactions overlook marginalised groups, focusing instead on universities, government departments, firms, NGOs.

After tracing the national context (Chapter 3) and the higher education context (Chapter 4), we present three distinct case studies involving university-community interactions in three different communities in the country (Chapters 5 through 7). We, again, turn our attention to marginalised, informal community-based groups as the purpose of this study was to examine how university actors were interacting with such groups.

Chapter 5 analyses interactions between University of Botswana researchers and the Kuang Hoo Community Trust. Initiated by the chief of the community, these interactions aimed to support San people, who had been relocated from their homes on the Central Kalahari Game Reserve (CKGR), to determine innovative ways to mobilise and reorganise their Community Trust.

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Chapter 6 focuses on interactions between the University of Botswana academics and the Kgetsi ya Tsie Community Trust. Initiated by the community, this interaction aimed to support community members in their natural resource-based project by helping them improve their Morula oil manufacturing processes and quality control measures.

Chapter 7 analyses interactions between University of Botswana academics and the Moshupa Youth Empowerment Project. Initiated by University of Botswana academics, the interactions brought about innovative educational and vocational programming for youth.

Following the analysis (Chapters 3 through 7), Chapter 8 syntheses key findings from the cases studies and Chapter 9 brings together the study's findings in their entirety to explicitly respond to the research questions by summarising key insights about how universities can and do interact with marginalised communities. In this final chapter, we will also consider the policy implications of this research for national and possibly regional governments and universities, as well as the contributions of this study's findings for the newly emerging field of innovation for inclusive development.

Chapter 1. Innovation for Inclusive Development

The aim of this report is to explore the role that universities play in inclusive development in Botswana. This chapter presents our analytical framework, tracing the current scholarship in the field and making explicit our understanding of key concepts. We also discuss reasons for our choice to deliberately focus on interactions between universities and marginalised communities – a choice heavily informed by current scholarship in the field of innovation for inclusive development.

Analytical framework

This section presents our analytical framework, defining key concepts, namely, (1) national innovation system; (2) innovation; and (3) inclusive development (Table 1.1). It is important to note, that we understand there to be a dialectical relationship between inclusive development and social innovation within a national innovation system. We have chosen to make inclusive development a priority as economic growth has not always benefited those living in informal communities and belonging to marginalised groups (Paunov, 2013).

Table 1.1 *Key understandings informing our analysis*

Concept	
National Systems of Innovation (NSI)	A network of actors working to bring about new innovations (Lundvall, 1992; Martin, 2008; Nelson, 1993; Zahra & George, 2002). While we examine the national system of innovation more broadly in Chapter 3, we focus on particular interactions between university actors and community actors (which are, of course, happening as a part of the national system of innovation).
Innovation	Innovation, understood broadly, involves upgrading and capability building (Lundvall, Joseph, Chaminade, & Vang, 2009). More particularly, it can involve social, market, organisational, process, and product innovations.
Inclusive development	Inclusive development is "development that reduces poverty, [and] enables all groups to create opportunities, share the benefits of development and participate in decision-making" (UNDP, n.d.).

Our study employs a **National Systems of Innovation (NSI)** approach (Lundvall, 1992; Martin, 2008; Nelson, 1993; Zahra & George, 2002), viewing innovation as occurring within a network of actors. With that, our analytical focus is not on the work of lone individuals or agencies, but on the interactions between actors, namely between universities and communities. While an NSI approach traditionally calls attention to the ways that "interactions initiate, import, modify and diffuse new technologies" (Freeman, 1995), our focus is on how interactions can bring about—initiating, importing, modifying and diffusing—innovations for inclusive development. Drawing from Mncwango (2013), we also examine how innovation systems can involve interactive, non-linear processes in which various actors (e.g., firms, industries, research institutes, customers, authorities, financial organisations, and institutions) interact.

Our analysis is also informed by current understandings of **inclusive development.** We view inclusive development as "development that reduces poverty, [and] enables all groups to create opportunities, share the benefits of development and participate in decision-making" (UNDP, n.d.). We conceptualise it as something that is by and for marginalised communities/individual (Cozzens & Sutz, 2012), and that community members participate in and benefit from (Ramos, Ranieri, & Lammens, 2013). This means that development is not happening for or on behalf of socially/economically marginalised groups, but in partnership with them. Further, the aim is not for economic growth or development alone (Cozzens & Sutz, 2012, p. 8), but for economic development that is responsive to and inclusive of marginalised groups. Guided by this understanding of inclusive development, our research tried to critically examine who is benefitting in each of the university-community interactions we investigated. We did this by taking stock of particular outcomes and outputs from each interaction (as opposed to speaking more generally).

Current understandings of **innovation** also contribute to our analytical framework, allowing us to interrogate innovations that emerge in and through the university-community interactions. In our research, innovation refers, quite broadly, to anything involving upgrading and capacity building (Lundvall, Joseph, Chaminade, & Vang, 2009). We also draw from Williams Stewart and Slack (2005), who note that innovation can involve "adapting and 'domesticating' innovations both technically and socially, so they are appropriate for poor communities". Innovation, in our study, typically involves "doing-using-interacting" (Jenson, 2007, p. 280) as opposed to introducing technological/technical changes to the community. While innovation is characterised as that which is new (e.g., new to the world, to the nation, to the region), it frequently involves drawing from existing technologies, structures, supports, resources. Rarely is it coming out of nowhere. Marcelle (2014) rightly points out that innovation should not simply be able 'newness' but about 'value' to the individual or group. More particularly, we focus on social, market, organisational, process, and product innovations as defined in Table 1.2 below.

Table 1.2 *Innovations*

Innovation	
Social innovation	Social innovation involves changes that are "socially oriented" (Cassiolato, Soares, & Lastres, 2008), and that improve the livelihoods of people first and foremost (as opposed to making a profit) (Cassiolato, Soares, & Lastres, 2008; Dagnino, 2010). Social innovation is not necessarily about introducing new types of production or exploiting new markets for the sake of exploiting them, but is about satisfying new needs not provided by the market (even if markets intervene later) or creating new, more satisfactory ways of insertion in terms of giving people a place and a role in production (Caulier-Grice, Davies, Patrick & Norman, 2012, p. 9). Social innovations are new to the territory, sector, or field of action (Caulier-Grice, Davies, Patrick & Norman, 2012, p. 27)
Market innovation	Market innovation involves gaining access to markets (e.g., locally, nationally, internationally), and/or improving one's understanding of the market. It involves creating/accessing networks/markets. Market innovation can also involve linking users and producers (Lundvall, 1985).
Organisaitonal	Organisational innovation involves changes in organisational structures, business plans, strategies, supports, systems, and/or "innovations in

innovation	organisational forms and business models that accompany a change in physical technology" (Cozzens & Sutz, 2012, p. 21). To give an example, Hall (2005) uses the term organisational innovation to refer to NGO organisations working as intermediaries to link research institutes with farmers (as cited by Cozzens & Sutz, 2012, p. 23)
Process innovation	Process innovation involves changes in manufacturing and/or production processes. It can also involve improvements in quality or productivity.
Product innovation	Product innovation invoves changes/improvements in (or the development of) products (e.g., machinery, objects, tools, technologies). It typically involves technical or physical innovations (see, for example, Nelson & Sampat, 2001). It can also involve quality improvements.

The aforementioned concepts—National Systems of Innovation, inclusive development and innovation—inform our analysis, calling our attention to practices and relations between actors, and to innovations emerging in and through interactions. Not only did we use the concepts to analyse our data, we also critically examined how our findings can speak to the contemporary literature in the field. Just as Szogs, Cummings and Chaminade (2009) acknowledge "the nature of innovation systems in developing countries differs substantially from those in developed countries," we wanted to clarify how innovation and inclusive development are brought about locally in Botswana, and how those particular interactions can inform scholarship on innovation for inclusive development.

Analytical focus

To analyse how innovation can bring about inclusive development, we focused our attention on interactions between university actors and marginalised community actors. While our aim is to understand Botswana's National System of Innovation more broadly, we focused our attention on particular practices and relations.

Our analysis focuses chiefly on **universities.** While actors within a national system of innovation can include, for example, firms, universities, government agencies, industries, community enterprises, marginalised communities, research agencies, NGOs, or public sector industries, we start from the standpoint of university actors. We, first, explicate the inner-workings of universities in Botswana (analysing key policies, efforts, supports, and structures). We then move to tracing the myriad of interactions between university actors and external social partners at two public universities in Botswana before conducting more in-depth analysis of three specific university-marginalised communities. Our focus on universities is deliberate as universities are thought to play a key role in a nation's innovation system.

Marginalised communities play a central role in our analysis. While we could have examined university interactions with any number of actors, we focused our attention on marginalised peoples in the informal sector. Marginalised groups are prevalent in informal settings, where people live and work (Cozzens & Sutz, 2014 p. 5). These informal settings traditioanlly fall outside of institutional/governmental regulations, policies, and structures (Cozzens & Sutz, p. 5). The communities in our study experience various livelihood challenges. For example, Chapter 5 focuses on San people, who are ethnically marginalised and have been relocated from their homes and traditional ways of life on the Central Kalahari Game Reserve to a typical Tswana village setting.

Chapter 6 focuses on disadvantaged women. Chapter 7 focuses on youth, who are experiencing a variety of livelihood issues (e.g., high levels of school dropouts, unemployment, and crime).

Our interest in marginalised communities was motivated both by current scholarship that recognises the role marginalised communities can play in national innovation efforts. For example, Szogs, Cummings and Chaminade (2009) underscore that informal partnerships, which "include micro-enterprises and small scale agricultural production," are—or perhaps can be—a "key distinctive feature of the innovation systems in less developed countries" (page number). In addition, Mncwango (2013), points out that university-community interactions can help diffuse technologies and link local communities with other organisations.

The realisation from early rounds of data collection that marginalised communities in Botswana have tended to be overlooked in national economic development efforts also motivated our decision to concentrate on this social group. For example, Botswana's *National Settlement Policy* (1998) asserts, "the low standard of infrastructure and services and low purchasing power of rural inhabitants has rendered villages and rural areas unattractive to private investors and financial institutions" (p. 12). Again, we were motivated both to understand the capacity of marginalised communities to support innovation as well as the ways marginalised communities have been disadvantaged/excluded from national innovation efforts.

Recent studies have suggested that innovation systems in developing countries differ from those in developed countries (Arocena & Sutz, 2000; Cassiolato et al, 2003; Lundvall et al, forthcoming; & Altenburg, forthcoming as cited by Szogs, Cummings & Chaminade, 2009). With that, we hope that our analysis of innovation for inclusive development in Botswana will contribute to understandings of what innovation looks like in developing countries.

Chapter 2. Methodology

This study sets out to provide richly descriptive case studies to analyse the ways in which selected universities in six African countries are interacting with these countries' marginalised communities to address their livelihoods issues. This specific component of the larger study was to understand the effects of the University of Botswana's interactions with informal communities to understand how innovations in these communities could potentially promote and support inclusive development. Since our research questions were exploratory in nature, we relied on qualitative open-ended research methods to collect our data.

The data collection methods, which will be described in greater detail in the sections below, were centrally designed by the UNIID project team leaders at the Human Science Research Council (HSRC) located in South Africa. These tools were then adapted by the members of the Botswana study team to suit its national and institutional needs. The data collection process informing this study was divided into four stages with findings from one stage feeding into the next stage of data collection. For example, stage one of the process began with a document analysis of key national policies related to Botswana's national innovation and higher education systems. Findings from this document analysis are discussed in chapter 3 of this report. Guided by a better understanding of the national innovation system and the higher education context in Botswana, we then selected two university institutions to continue this investigation. This second stage of the investigation examined the ways in which these institutions' academics and university departments were or were not interacting with other universities, organisations and communities. Data was collected through interviews and surveys methods. In addition, we also analysed university policies and other documents to learn about institutional structures and policies currently in place that support or constrain academics' interactions with institutions and communities outside of their own. Findings from this mapping investigation are discussed in chapter 4 of this report. They also informed the selection of three case studies of university/community interactions for further analysis. These case studies were conducted to better understand how universities in Botswana were interacting with informal communities to potentially support innovations in these communities. Findings from these three case studies: the Kuang Hoo Community Trust; the Kgetsi-Ya-Tsie Community Trust; and the Moshupa youth empowerment project will be discussed in chapters 5, 6, and 7 respectively.

Research Ethics

This study was conducted according to ethics procedures of the South African Human Science Research Council, the University of Botswana, and the Botswana Agriculture College. All research was conducted in accordance with these institutions' ethical research guidelines. As per these institutions' guidelines, all participants went through the informed consent process prior to participation, meaning they were informed of the study's purpose and signed consent forms prior to completing surveys or participating in interviews. Participants were particularly informed of issues related to confidentiality and anonymity. Although all possible steps were taken to ensure participants' identities would remain anonymous, the study's focus meant participants' identities could potentially be inferred based on their responses. In such cases, participants were informed of excerpts of interviews that would be used to determine whether they did or did not feel comfortable with such excerpts being published. All interviews were recorded and transcribed verbatim and all of the study's data has been safely stored according to the University of Botswana's and Botswana Agricultural College's ethical guidelines.

Stage 1 - Preliminary Analysis - Botswana's NSI & Higher Education System:

The first stage of this research study was to conduct a preliminary analysis of the country's development challenges, its national system of innovation, and how these conditions are potentially connected to the country's higher education system. The goal of this stage of the research process was to understand how innovation tends to be conceptualised in national policy documents, as well as gain an understanding of the country's higher education system in order to select two or three public post-secondary institutions to begin the next stages of data collection. Findings from this analysis are found in chapter 3 of this report.

Stage 2 - Mapping Exercise - Two Public Universities

The second component of this research study focused on conducting a mapping exercise of two post-secondary institutions in Botswana. These institutions were selected from the first phase of data collection. Based on both the preliminary round of analysing Botswana's higher education context, as well as this study's focus on public institutions, we concentrated our initial efforts of understanding interactions at two of Botswana's fully-functioning higher education institutions: the University of Botswana (UB) and the Botswana College of Agriculture (BCA)[1]. It is important to note that although we started with these two institutions at the outset of data collection, we decided to exclude BCA from the next phase of the study because the institution was not a full-fledged university, and moreover, participation in the research was extremely limited[2].

Specifically, this round of data collection sought to understand the ways in which academics at these the University of Botswana were or were not engaging with other social actors such as farmers, firms, other universities, communities, governments, social organisations, and so on. This stage also tried to understand other factors, such as institutional policies, and so on, enabling and constraining such interactions. Findings from these interviews, document analysis, and surveys were also used to help us identify interactions between universities and informal, marginalised communities that could be examined in the next stage of this investigation. The sections below describe the three methods - open-ended interviews, document analyses, and questionnaires - used to collect data during this stage of study collection as well as the methods used to analyse the questionnaire data. The findings from this stage of the analysis are found in chapter 4 of this report.

Open Ended Interviews

As a part of understanding how universities in the country do or do not interact with informal communities, we first conducted a mapping study to investigate university-external social partner interactions. This stage of the data collection process began with conducting open-ended interviews with individuals in senior management positions. Table 2.1 below indicates the various positions held by the ten participants interviewed at the University of Botswana. Interviews explored issues related to each university's institutional mission; institutional structures and processes, particularly in relation to interactions with external academic and non-academic organisations; organisational

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[1] Although the Botswana International University of Science and Technology (BIUST) is also a public university in the country, we decided not to include it in this study because it is still at an early stage of inception.

[2] Our target sample from the Botswana College of Agriculture, which has an academic staff population of 101, was 30 participants. Unfortunately, we were only able to get 13 individuals to complete the questionnaire. This challenge as well as the decision to only focus on cases of interaction from the University of Botswana, are the two main reasons we decided to concentrate exclude this institution from our investigation.

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governance; the institution's incentive and reward mechanisms; outcomes and obstacles to these interactions; the institution's capacity to interact with external social partners, and its broad mission of teaching, research, innovation, and engagement (See Appendix A for a detailed overview of this interview schedule).

Table 2.1 *Senior management staff interviewed at UB*

Level of Senior Management	University of Botswana (UB) Number Interviewed
Vice Chancellors/ Principal	-
Deputy Vice Chancellors	3
Deans	5
Directors	2
Total	**10**

Document analysis

Findings from these open-ended interviews helped inform the second data collection method used during this stage of data collection - textual analysis. From these discussions, we learned which key institutional documents (e.g., policies, strategic plans, reward systems, guidelines, and institutional frameworks) needed further analysis to better understand university/external partner interactions in this particular context. Analysis of these documents helped us understand the current institutional guidelines in place at the University of Botswana that either supported or constrained interactions between academics at the university and formal and informal actors outside the institution.

Questionnaires

In addition to conducting open-ended interviews and document analysis, we also sent out questionnaires to academic staff members at our study site. We sought to have academics from all of the 52 departments at the University of Botswana complete the questionnaires. Although UB has academic staff at all four academic ranks (Lecturer, Senior Lecturer, Associate Professor and Full Professor), not all departments have academics at the rank of Professor; therefore, the study group decided to address this issue by having at least three academics per department complete the questionnaire. This means the target sample for the University of Botswana was 156 respondents. These respondents were then further divided into two groups based on whether they had or had not participated in interactions with external social actors. Academics that had participated in such interactions completed a questionnaire to gather further information about these relationships (see Appendix B for questionnaire). Academics who had not participated in any such interactions completed a questionnaire exploring reasons for not doing so (see Appendix C for questionnaire).

To meet our sample target, questionnaires were sent to 52 departments at the University of Botswana. In total, we exceeded our target, receiving completed questionnaires from 189 staff members (of 877) at UB. Table 2.2 below breaks down the number of respondents at different academic rank per department from the University of Botswana. Of the UB respondents: 54 respondents were in Education; 35 respondents were in the Social Sciences; 30 respondents were in the Humanities; 24 respondents were in the Health Sciences; 21 respondents were in the Sciences, 21 respondents were in Business; and four respondents were in Engineering and Technology. In

terms of academic ranks: 82 of the respondents were senior lecturers; 77 were lecturers; 18 were full professors; and 12 were associate professors.

Table 2.2 *Breakdown of respondents by academic faculties and ranks at UB*

	Lecturer	Senior Lecturer	Associate Professor	Full Professor	**Total**
Humanities	8	15	1	6	**30**
Social Sciences	10	19	5	1	**35**
Science	12	9	-	-	**21**
Education	35	15	-	4	**54**
Business	8	7	5	1	**21**
Health Sciences	3	14	1	6	**24**
Engineering and Technology	1	3	-	-	**4**
Total	**77**	**82**	**12**	**18**	**189**

Statistical Analysis

We relied on descriptive statistics, such as simple frequencies and averages, to analyse data collected from the questionnaires. For the survey data collected, our large sample size allowed us to measure data reliability using a Likert scale of statistical analysis, repeatability/consistency, variable importance, and weighted average. We were particularly interested in learning about the types of external social partners our respondents were interacting with; the types of relationships they had with their external social partners; channels of information they used to inform their institutions of these interactions; outputs from these interactions; outcomes/benefits from these interactions; and obstacles/challenges to form and participate in these interactions. The following section describes the methods used to analyse the quantitative data.

University of Botswana Data Set

The sample size of 189 respondents from the University of Botswana meant the survey data could be subjected to statistical analysis. The data was first assessed to be reliable as reflected by the outcome of the Likert scale statistical analysis. The analysis provides information about the relationships between individual items in the scale. Interclass correlation coefficients can be used to compute inter-rater reliability estimates (Cortina, 1993). For example, one can determine the extent to which the items in a questionnaire are related to each other. Further, an overall index of the repeatability or internal consistency of the scale as a whole can identify problem items that should be excluded from the scale:

"_ > .9 – Excellent,

_ > .8 – Good,

_ > .7 – Acceptable,

_ > .6 – Questionable,

_ > .5 – Poor,

In the current study, most responses to the questionnaires administered to the academic staff had a Cronbach's value greater than eight, which increases our confidence in using this data for further analysis.

Table 2.3 *Results of Likert scale statistical analysis for reliability of questionnaire data*

Reliability using Cronbach's Alpha			
	Alpha	Alpha based on Standardised items	Number of items
External social actors	0.878	0.88	28
Types of relationship	0.883	0.886	21
Outputs	0.805	0.854	11
Outcomes and benefits	0.912	0.911	20
Obstacles	0.895	0.896	13

Once reliability was determined, we then subjected the data to the Weighted Average Index (WAI) for each item based on the Likert scale response. The averages were sorted in descending order by dimension within each institution and within the total survey population in order to form an index of weighted averages. This was done to facilitate the exploration of the importance of each variable within each dimension and within each institution. The following dimensions were included in the analysis: types of external social partners (30 variables), types of relationships (25 variables), outcomes and benefits (20 variables), channels of information (19 variables), obstacles and challenges (13 variables), and outputs (12 variables). The WAI for each variable was calculated by dividing the sum of the responses for each variable (a value between 1 and 4) by the number of responses. The formula below was used to calculate the WAI:

$$WAI = \frac{\sum_1^4 W_i}{\sum F}$$

where *F* equals the frequency of a specific value (between 1 and 4) selected by the respondents, *W* equals the actual value selected and multiplied by its frequency of occurrence, i.e. the weight (value between 1 and 4) and *N* the number of responses. The degree of importance of respondents' perceptions on a Likert Scale was also undertaken where it was deemed necessary. The Likert scale used for the study ranges from 1 to 4 where 1 was *"No interaction at all"*, 2 was *"Isolated instances of interaction"*, 3 was *"interaction on a moderate scale"*, and 4 was *"Interaction on a wide scale"*. Results from the surveys will be discussed in chapter 4 of this report.

Step 3: Case Studies - University/Informal Community Interactions
The following sections explain the exploratory case study methodology used for this study's final stage of data collection. Findings from this stage of the analysis will be discussed in detail in chapters 5, 6 and 7 of this report.

Case Study Identification Process:
As described in the introduction to this chapter, this study was divided into four stages with findings from one stage informing the next stage of collection. We analysed findings from both the open-ended interviews with university senior managers and questionnaire data gathered during the previous stage of data collection to select the three cases. All three cases involved university researchers interacting with informal, marginalised communities to support innovations in these communities that address livelihoods issues.

Cases of interaction were purposively selected from our open-ended interviews with UB administrators and analysis of the questionnaire data exploring university-external social partner interactions. We then analysed these potential cases against selection criteria for case studies established for the UNIID study. This process helped us determine whether the interaction was suitable for this study's specific focus on innovations that address livelihoods issues. Box 3.1 outlines this criteria in greater detail. One of the challenges to find appropriate cases that satisfied each aspect of the criteria was that many of the university/informal community interactions focused on improving the quality of life of these groups through water, energy, or healthcare rather than develop innovations that address the community's livelihood needs. It is important to note that perhaps some of the cases we did select, after analysis, are still too focussed on quality of life improvements rather than developing innovations to address a livelihoods need of the informal communities. This is an issue that will be further discussed in this report's final chapter.

Box 2.1 Selection criteria for cases

- Does the interaction contribute towards improved livelihoods?
- Is the case set in the informal economy or within informal employment in the formal economy?
- Do local communities participate in the identification of the problem that the interaction is seeking to solve?
- Can these communities be characterized as marginalised?
- Are products, processes or organisational structures developed?
- Do local communities provide input into possible solutions?
- Do local communities participate in processes, including proposal evaluation, setting the terms of engagement, and monitoring and evaluation?
- Do local communities contribute their knowledge in a collaborative process of knowledge production?

After subjecting our list of potential cases to this criteria, our study team narrowed the selection to the following three cases that demonstrate instances of university academics attempting to enable innovations with three marginalised, informal communities in Botswana to address their livelihood needs. The first case involved the Kuang Hoo Community Trust, based in the village of Kaudwane, a San settlement of marginalised San people in the remote, rural area of western Botswana. The second case involved the Kgetsi ya Tsie Community Trust, a formal/informal women's community trust based in Lerala and Seolwane, two villages in the central eastern region of Botswana. The third case is the Moshupa Youth Empowerment project, which focuses on marginalised under-educated and unemployed youth in the village of Moshupa, a village in the south of Botswana. These three cases focus on different regions of the country: the Kuang Hoo case is set in a remote and rural region of the country; the Kgetse ya Tsie case is also based in a rural context; and the Moshupa case study is set in a peri-urban context of the country. The following sections describe the data collection methods used to collect data for the case studies.

Data Collection Methods

Interviews and document analysis were used to collect data for the case study investigation component of this study. The following sections explain these methods in greater detail.

Interviews

The case studies used a one-on-one narrative interview approach as well as, in some instances, group interviews with community members in some of the informal communities to collect data for this component of the investigation. For each of the three cases, we conducted interviews with university actors (e.g., academics/researchers, senior managers, administrators in the various university research centres), as well as community actors (e.g., project leaders, traditional authorities, community members). Interviews were recorded and transcribed verbatim. For the Kuang Hoo Community Trust case, interviews were conducted in the village of Kaudwane, which is located in Kweneng West district of Botswana. For the Kgetse ya Tsie case, interviews were conducted in the villages of Lerala and Seolwane in the Central, Eastern district of the country. And finally, for the Moshupa case study, interviews were conducted in the village of Moshupa, which is located in the Southern district of Botswana. Interviews were also conducted at the University of Botswana, which is located in Botswana's capital city, Gaborone, with all members of the university community associated with the three cases.

Interviewees relied on the UNIID interview guide to interview community members and the interview guide to interview members of the academic community involved in the interactions. Box 3.2 below provides a list of interviewees that participated in interviews for each of the three case studies. Each interview began by asking the participant to describe the beginning and evolution of the community/university interaction. They also asked the participants to describe the various actors involved in the interaction, how these actors were involved, how they relate to one another in terms of knowledge flows, funding flows, and technology flows. The main goal of each interview was to attempt to better understand all facets of the interaction between the community actors and the university actors as well as to identify other community members, academics, or other actors that could provide further insights into the interaction. In addition to conducting interviews, the researchers also took field notes while doing their interviews in the three study sites of the communities.

Box 2.2 *List of Interview Participants for Three Case Studies*

University	Social Partner	Interviewee(s)
University of Botswana	Kuang Hoo Community Trust	Community based organization leader for Kuang Hoo Trust Community participants (including councillor) Officers from Department of Wildlife & National Parks
University of	Kgetsi ya Tsie	Coordinator of Kgetsi ya Tsie

Botswana	Women's Trust	Community Member Production Division Community Member Marketing Division UB researchers in Chemistry Department UB researchers in Mechanical Engineering Department
University of Botswana	Moshupa Youth Empowerment Project	UB academics (different ranks) UB centre administrators Community leaders (bogosi): Moshupa Youth Tutor Coordinator of Tutors Student beneficiary Artist who benefited from programme UB researcher

It is important to note that because participants had diverse backgrounds, different approaches were used to guide the interviews. For example, although the interview guide set by the study team helped begin conversations with the community members, in some instances, the researchers had to simplify the questions to help interviewees understand the study's complex ideas. In addition, some of the interviews were conducted with vulnerable members of the country's marginalised groups and caution had to be exercised to ensure participants were informed of the study's informed consent process as well as their options for protecting their identities. Furthermore, many members of the Kuang Hoo Community Trust, located in Kaudwane, are of San descent and cannot communicate in Setswana. In these cases, interpreters who spoke both the San language and Setswana facilitated the interviews.

The study team subjected the preliminary findings from the interviews to member checks by sharing ideas emerging from the interviews at stakeholder workshops held at the University of Botswana and at various venues in Gaborone with various members of the three communities between 2014 and 2015. Additionally, interview data was supported by reviewing secondary sources, such as books, book chapters, journal articles, policy documents, reports, and recorded minutes and reports on interactions, particularly from the San Research Centre.

Case study analysis

After collecting data for the case studies, we sought to analyse it using concepts from the literature (as introduced in Chapter 1). Our overarching goal was to understand the particular cases of innovation while better understanding how universities can best promote innovation while supporting people in informal settings (Kruss, 2012; Kruss & Gastrow, 2015). More particularly, we wanted to understand how patterns of interaction between universities and external social actors are shaped by institutional (national and university) frameworks (e.g., structures, supports, policies). Each of the three cases provides an in-depth analysis of the following:

- Overview of the interaction (e.g., social actors involved, relations between actors, sequence of events, community livelihood problem he interaction sought to address)
- Structure of the interaction
- Organisational arrangement and interface structures (e.g., policies, supports, funding)
- Drivers of interaction (e.g., motivations)
- Innovation types (e.g., market, organisational, process, product, social)
- Knowledge and skills transferred

- Community participation
- Outcomes and benefits
- Enabling and constraining factors impacting the interaction

Chapter 3. Botswana's National System of Innovation (NSI)

This UNIID report explores how Botswana's public universities interact with the informal community sector to support innovation. Before mapping university patterns of interaction (Chapter 4), and tracing the particular practices and relations involved in three specific university-community interactions (Chapters 5, 6, 7), this chapter provides an overview of Botswana's national system of innovation. It does so by first highlighting that Botswana is characterised by economic disparity; and, second, there is a need to improve government structures supporting innovation. More particularly, the following claims are put forth:

- Botswana has high levels of poverty, unemployment, and inequality.
- Botswana is characterised by an economic disparity between the rural communities and urban centres (which is evident in increasing rural to urban migration and in the increasing number of people working informally in urban centres).
- Botswana is characterised by an economic disparity between the formal and informal sector (which is evident in the exports/outputs and imports that support major industries—not the livelihood of people).
- Botswana has relatively few institutions contributing to the national innovation system with little to no formal links between them.
- There is potential for improved governmental structures, supports, resources, policies supporting inclusive development in Botswana.
- Government-led initiatives to support work in the 'Information, Communications and Technology' sector have not benefited marginalised communities.
- Government-led initiatives to support local entrepreneurs have been relatively unsuccessful.

After tracing the national system of innovation in Botswana (and explicating the aforementioned claims), this chapter will then consider how innovation is conceptualised in Botswana. We posit Botswana's conceptualisation of innovation—involving formal sector industries (including foreign companies)—disregards the needs of Batswana, particularly those in marginalised, disadvantaged and rural communities. To close, we detail how this analysis of Botswana's national system of innovation informs our subsequent analysis of the university-community interactions.

Botswana

Botswana has transitioned from being one of the poorest countries in the world (at independence in 1966) to being a middle income country with significant economic developments. These developments have been driven by minerals (particularly diamonds) and tourism. The revenue from the minerals and tourism have been re-invested back into the economy where it has been used to expand government ministries, especially those ministries providing citizens with various social services such as health, education, and physical infrastructure.

There have been several positive changes in Botswana. For example, the country's literacy rate has increased from below 25% of the adult population in 1966 to over 90% in 2007. Access to primary education stood at over 90% while that of three year junior secondary was 100% in 2007. Transition to senior secondary has increased from below 30% in the late 1990s to 67% in 2008. Access to tertiary education, though still low when compared to some its neighbours - especially middle income ones such as Mauritius, Namibia and South Africa - has been growing steadily, from 7% in 2005 to 11.4% in 2008.

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While there have been many improvements, there are still many challenges. The quality of life has not improved on average, mainly because of unemployment, particularly youth unemployment. Botswana has had challenges with the structure of its economy as the country has little industry, and efforts to diversify the economy have not yielded any positive results. Botswana has also had challenges with the structure of the formal education system as there is limited technical programmes (e.g., draftsmanship, carpentry, agriculture, building, boiler making, entrepreneurial studies), and there are some challenges with integrating marginalised people into the educational system.

Before gaining independence in 1966, Botswana's development initiatives were planned and implemented at the regional level within tribal reserves. Botswana was ruled by Britain through a system of indirect rule with the eight major tribes, who were led by chiefs that were responsible for the political and economic affairs in their chiefdoms (aka tribal reserves). The reserves helped to distinguish the current administrative districts (illustrated in Figure 1). Prior to gaining independence, there was no trade or political interaction between reserves. As such, innovation and economic growth happened regionally as there were little to no efforts at the national level and little to no collaboration between the reserves. This is striking to note as the transition from reserves to a unitary state under the control of a national president and national parliament is relatively recent.

Figure 3.1. Map of Botswana Showing Administrative Districts.

National System of Innovation

Economic disparity

While there has been an improvement in macroeconomic indicators, there are still (1) high levels of poverty, particularly (2) in rural communities and (3) in informal sectors.

While there has been a decrease in the number of people living in poverty, Botswana is still characterised by economic inequality. The percentage of people living in poverty in Botswana has decreased from 30% in 2002/03 to 20.7% in 2010/11 (Poverty Eradication Report, 2012). The government has also implemented various programs to address poverty. For example, the Poverty Eradication Programme (2009) was launched to address poverty and to decrease economic inequality. With these efforts, Botswana has shifted from a poor country to a middle income country. That said, even with these efforts and improvements, there is a relatively unequal distribution of wealth (African Development Bank and the African Development Fund, 2014). There are persistent problems of income inequality concentration of wealth, poverty and social exclusion, which indicate structural weaknesses of the regional economies (European Commission Policy Review, n.d., p. 13).

Botswana is characterised by an economic disparity between the rural communities and urban centres. This is evidenced by an increasing rural to urban migration, and an increasing number of people working informally in urban centres. The rural-urban migration has been attributed to low agricultural outputs, a lack of rural industries, and a lack of economic diversification (Kerven, 1980, p. 29). As of 1980, Botswana households typically supported themselves through the informal sector in urban areas while relying very little on produce from arable farming, (Kerven, 1980, p. 29). Somolekae (2008) notes that because of small scale and unprofitable arable farming, the informal sector is growing (p. 14). Rural areas have lost most of their ability to sustain people through agriculture, which means it has been common for urban household members to transfer their income to rural household members. Another reason that there has been an urban to rural migration is that the structure of the economy (and the percent of the GDP coming from different industries) has changed. For example, Agriculture was responsible for 42.7% of the GDP in 1966 and only 3.0% of the GDP in 2009 (see Table 3.1). Alternatively, mining wasn't noted on the GDP in 1966, but was responsible for 36% in 2009. Further, efforts to diversify the country, including the Economic Diversification Drive (2006) have been relatively unsuccessful. Aiming to support people in rural areas, the government's Public Works programme has given people in rural areas an income. That said, it hasn't been successful in altering the structure of the economy or in creating sustainable enterprises.

Table 3.1 *Percentage of Overall GDP (from 1966 and 2009)*

	1966	1975/76	1985/86	1995/96	2005	2009
Agriculture (Formal and Small holder)	42.7	20.7	5.6	4.1	1.8	3.0
Mining	-	17.5	48.9	33.9	38.0	26
Manufacturing	5.7	7.6	3.9	4.8	3.5	4.0
Water and Electricity	0.6	2.3	2.0	2.1	2.4	2.9
Construction	7.8	12.8	4.6	6.2	4.4	5.2
Trade, Hotels and	9.0	8.6	6.3	9.9	10.3	13.6

Restaurants					
Transport, Post and Telecommunications	4.3	1.1	2.5	3.6	3.6	4.9
Banks, Insurance and Business	20.1	4.7	6.4	11.2	10.5	12.4
General government	9.8	14.6	12.8	15.4	17.0	18.5

(Source: Bank of Botswana, 2010).

Botswana is characterised by an economic disparity between the formal and informal sector. Botswana has experienced an impressive economic growth at the macro-level in the formal sector— yet not at the community-level in the informal sector. It is important to highlight the government has tried to attract foreign companies to do business—instead of investing in Batswana. The government has opted to invite (and create financial schemes to attract) foreign entrepreneurs to come and set up businesses in Botswana. As such, the economic growth has been capital intensive or at the business level, but hasn't supported locals in securing employment or improving their livelihoods.

While Botswana exports a variety of commodities, many of them benefit formal sector industries (including foreign companies). The principle commodities exported from Botswana in 2008 included (in P'Million): diamonds (20793), copper/nickel matte (4561), textiles (1819), meat and meat products (609), vehicle parts (413), soda ash (221), hides and skins (40), and other goods (4080) (Central Statistics Office, 2009). The total exports are 32536 P'Million (Central Statistics Office, 2009). The following examples illustrate how exports/outputs benefit the formal sector—not the people of Botswana:

- There has been a significant increase in the export of textiles. That said, the export of textiles is mostly trade from China that is being routed through Botswana. In some ways, this impedes local and indigenous technological developments, and means the industries have little to no impact on the growth of employment among locals. This again illustrates why there was a growth in GDP, but not a growth in the labour force employment or social development.
- Similarly, between 1999 and 2004, Botswana's tourism output grew at an average rate of 9.3%. This tourism output was in the major tourist sector which is dominated by foreign companies—not by community members.

In Botswana, the imports are typically used to support business in the formal sector—not to benefit marginalised communities. With a total of 35433 P'Million important, the principle commodities imported to Botswana in 2008 included (in P'Million): Machinery and Electrical Equipment (6269); Fuels (6005); Food, Beverages and Tobacco (4272); Vehicles and Transport Equipment (3820); Chemicals and Rubber Products (3739); Metals and Metal Products (2797); Textiles and Footwear (1413); Wood and Paper Products (1206); and Other Goods (5912) (Central Statistics Office, 2009). As we can see, the majority of imports are materials to support formal sectors industries.

Government efforts

While there have been many government efforts (e.g., structures, supports, initiatives) since Botswana gained independence in 1966, there is still a need for more support. More particularly, this section highlights: (1) there are few institutions contributing to the national innovation system and little no formal links between them; (2) there are limited/inadequate supports for innovation for inclusive development; and (3) there is a need for government efforts to support information, communications and technology to benefit marginalised communities; and (4) there is a need for more entrepreneurial supports.

Botswana has relatively few institutions contributing to the national innovation system with little to no formal links between them. A national innovation system refers to the myriad of institutions involved with research in the public and private sector (e.g., NGOs, community-based organisations, universities, research centres, development centres, science councils, technology institutions, financial institutions, legal firms). While a country should ideally have active institutions with systematic linkages between them, within Botswana, there are relatively few active institutions and little to no strategic, systematic or formal links between them. At times there is a disjuncture between national initiatives (policies, structures, supports) and the livelihood needs of marginalised people in Botswana. There are few/inadequate linkages between government ministries, which is characteristic of developing countries (Szogs, Cummings & Chaminade, 2009).

While Botswana has made some efforts to support innovation for inclusive development, their efforts are relatively underdeveloped (as is typical for an emerging country). After gaining independence, the post-colonial government has worked to institute a national development planning system (with five year cycles). The system was designed to unify the formerly disconnected reserves through a democratic government, and to adopt the planning objectives of social justice, rapid economic growth, economic independence and sustained development (Botswana Government, 2009, p. xxiii). In 2012, *botho*, the equivalent of *ubuntu* (respect for others) was added. The country has a strong policy context that is evident in the National Development Plan (NDP) process. There are several policies at work, including, the current NDP 10 (which commenced in 2009), the Tertiary Education Policy (2008), and the Revised National Policy for Rural Development (approved in 2002). That said, Botswana does not have a policy specifically focused on innovation.

While Botswana has experienced rapid economic growth and various national planning initiatives (e.g., policies, structures, supports) have been put in place, it is important to note that they are relatively new and are still very much in progress (as accommodating the gaps that resulted from the compartmentalisation of rural tribes has been no easy task). Some planning initiatives, particularly in the realm of social justice, have been under-realised or ineffective. For example, the development model (as implemented by the government) has produced an economy that has further disadvantaged marginalised, rural communities. Further, there is sometimes a lack of synergy between these policy instruments, which has resulted in gaps in the implementation of policies and in the process, national development targets such as youth unemployment and the growing poverty of the marginalised population groups have been largely missed.

Government-led initiatives to support work in the 'Information, Communications and Technology' sector have not benefited marginalised communities. As a land-locked country, Botswana has been trying to engage with the international knowledge community in a variety of fields in order to foster economic growth and enable local/foreign investment.

The following are a few key ICT initiatives:

- The country's *Information Communications and Technology (ICT)* policy () aimed to further international market connections in the field. That said, it focused almost exclusively on assisting major industries—not on supporting the people of Botswana.
- The *Maitlamo Policy* (1997) has supported ventures in e-commerce, e-governance and e-banking. That said, it has not supported the people of Botswana, who have high literacy levels, but lack the need skills/training to be able to participate in an international knowledge economy.
- The Botswana Innovation Hub (BIH) (founded in 2008) works to support science, technology and innovation, and has registered 27 innovative businesses and institutions to its membership (as of 2014). The business registered include international and local high technology companies, academic and research institutions, start-ups and strategic leverage partners to develop the Science and Technology Park.
- The government has also established the Botswana Fibre Networks Ltd (BoFiNet) to address the challenges with respect to internet connectivity, particularly the bandwidth.
- Further, the government has been funding the optic fibre reticulation of the physical site where diamond traders are operating (known as the diamond trading park) to ensure that Botswana's diamond customers have access to information and communication technology for doing business in Botswana.

ICT infrastructure is indeed a major focus of economic development in Botswana. That said, the focus of these initiatives have benefited selected, major industries, with little benefit to informal, small or medium enterprises that the majority of the population is involved in. This means that ICT is not yet instrumental in inclusive development.

While Botswana relies on entrepreneurs (with few employment opportunities), government-led initiatives to support local entrepreneurs have been relatively unsuccessful. With little to no employment opportunities, the government has encouraged university graduates to create their own jobs (Tabulawa, 2009; Tertiary Education Council, 2010). A dedicated business skills training organisation, the Local Enterprise Authority (LEA), was set up in 2000 specifically to empower locals to do business. Similarly, the Financial Assistance Policy and its successor the Citizen Entrepreneur Development Agency (CEDA) have tried to fund business projects. That said, these entrepreneurial projects typically have low success rates. Entrepreneurial projects often struggle with bureaucratic red-tape, negative attitudes of public officers to private sector initiatives, high cost of utilities, and the length of time it takes to assist businesses with critical services (Somolekae, 2008). Further, these projects do not qualify for the government loans or financial assistance programmes. Overall, these initiatives have not been very successful and many Batswana have limited business or entrepreneurial skills.

Innovation

Within Botswana's national system of innovation, innovation has been characterised nationally—not locally; and formally—not informally. Given that innovation can, more broadly, involve the development of products, processes, organisational structures or social structures in any number of sectors, communities, organisations or universities, it is striking that the Botswana government has focused almost exclusively on implementing national supports and assisting industries in the formal sector.

As we have seen, innovation has been conceptualised nationally—not locally—in Botswana. This is striking since—prior to gaining independence in 1966—innovation used to happen locally on reserves—with little to no collaborative efforts between reserves and little to no national efforts. Reserves were responsible for their own economic wellbeing, which happened through small-scale, local initiatives. It is important to highlight that, recently, much of the government's energy and resources have gone to implementing larger-scale, national initiatives or to supporting major industries—not to honouring or responding to the needs of people locally.

Innovation efforts in Botswana are almost exclusively focused on work in the formal sector—not the informal sector. As we have seen, formal sector industries (and the government policies supporting them) have failed to support the livelihood needs of the people of Botswana, particularly those living in marginalised, rural communities. While there have been various economic developments and various policy initiatives aimed at promoting innovation, these efforts have failed to engage with communities or to address the livelihood needs of communities. It is striking that the informal sector, namely, the marginalised households where people live and informal economies where people work (Cozzens & Sutz, 2012, p. 5) has been overlooked.

Our sense that innovation has been conceptualised nationally—not locally—and formally—not informally—suggests that the economic growth in Botswana has not been "inclusive growth" (Ramos, Ranieri, & Lammens, 2013) as community members haven't participated in or benefitted from the growth. The development in Botswana has not been by or for marginalised groups, and therefore has not been inclusive (Cozzens & Sutz, 2012). In turning our attention to local, context-specific and informal interactions between university actors and community actors, we hope to consider how future efforts can be more inclusive. We also hope to consider how informal partnerships, which "include micro-enterprises and small scale agricultural production," are—or perhaps can be—a "key distinctive feature of the innovation systems in less developed countries" (Szogs, Cummings & Chaminade, 2009, p. 3).

Conclusion

This chapter has explicated Botswana's national system of innovation. While we have acknowledged the difficulties of implementing a national system of innovation, this chapter has also highlighted how existing government structures, supports, resources and policies are limited/inadequate. Further, this chapter has demonstrated how—despite some governmental efforts (e.g., policies, supports, structures) and despite an increase in economic development (including in outputs/exports)—Botswana is still characterised by economic disparity and by a low standard of living. By shedding light on the national context, this chapter has underscored the need for inclusive development and for university-community partnerships that support the livelihood needs of communities. It is with this understanding that we undertook our analysis of the higher education system (Chapter 4) and of the interactions between universities and communities (Chapters 5, 6, 7). The findings of this chapter have also motivated us to explore how universities can play a role in inclusive development. More particularly, we ask: how can universities enhance the livelihood of communities? How are universities nested within the innovation system? Chapter 4 on "Mapping Patterns of Interaction," responds to these questions.

Chapter 4. Mapping Patterns of Social Interaction in Higher Education

The overarching aim of this chapter is to explore the role universities play in Botswana's national system of innovation, specifically by examining the ways in which universities are encouraged to and currently interacting with external social partners – individuals and groups based outside of the university structure. This was done by investigating the patterns of interactions between the university and other actors (Kruss, Visser, Haupt, & Alphane, 2012). The analysis in this chapter is informed by a myriad of data (e.g., interviews with university senior management, questionnaires for academic staff, and a textual analysis of various institutional documents).

There are a total of 15 public and private tertiary educational institutions (see Table 4.1 below) in Botswana. It is important and interesting to note that within this context, different universities, depending on their mandate, report to different government ministries. For example, the University of Botswana reports to the Ministry of Education while the Botswana College of Agriculture, given its different mandate, reports to the Ministry of Agriculture.

The findings in this chapter focus specifically on the patterns of interactions between academics at the University of Botswana (UB) and external social partners. We have chosen to focus on UB because as stated above, until recently it was the only public university in the country; thus making it the key player in Botswana's tertiary education system. For example, of the 28 672 government sponsored tertiary level students between 1997 and 2005, 80% of them were enrolled at this institution (Pillay, 2008). UB is a comprehensive, public university that has a student population of 16,239 students and employs 896 academic staff.

The structure of this chapter is as follows: First, it provides a brief contextual overview of the institution, introducing its key actors and how they tend to interact with external social partners. Second, we discuss key findings from interviews with senior managers at this institutions, analyses of key institutional documents, and results from the surveys. Finally, this chapter concluded by describing what we learn about interactions at UB, particularly about how academics at this institution interact with external social partners and what institutional structures support and constrain such interactions. Analysis in this chapter provides the basis for the three subsequent case studies discussed in the next three chapters.

Table 4.1 *Tertiary Education Institutions by Type and Level of Qualification*

Name of institution	Main disciplines/ subjects taught	Level of qualification(s)
University of Botswana	All academic disciplines including ICT, law, medicine and engineering	Diploma, undergraduate, graduate
Botswana International University of Science and Technology (BIUST)	Engineering, ICT, natural sciences	Undergraduate, graduate
Botswana College of Agriculture (BCA)	Agriculture, Food Science, Veterinary	Diploma, undergraduate, graduate
Ba Isago (University College of	Accountancy, business, business law,	Diploma, undergraduate,

UNISA)	management, ICT	graduate
ABM University	Accountancy, business, management	Diploma
Limkonkwing University of Creative Arts	ICT, creative arts, business	Associate degrees (diploma)
Botho University	Accountancy, business, management, ICT	Diploma, undergraduate
Tlokweneng College of Education	Teacher education	Diploma
Tonota College of Education	Teacher education	Diploma
Serowe College of Education	Teacher education	Diploma
Lobatse College of Education	Teacher education	Diploma
Kanye Institution of Health	Nursing, pharmacy, dental care	Diploma
Serowe Institution of Health	Nursing, pharmacy, dental care	Diploma
Francistown Institution of Health	Nursing, pharmacy, dental care	Diploma
Botswana Accountancy College	Accountancy	Diploma

University of Botswana

Since its establishment by an Act of Parliament in July, 1982, the University of Botswana has played a central role in Botswana's national development, first by providing manpower that the country's government initially needed to drive its economy, especially the public service. UB was the only institution of higher learning in the country for a significant period of time; therefore, it needed to be a comprehensive institution, offering courses of study in all of the disciplines and professions given the lack of other institutions and technical schools in the country (as was discussed in the previous chapter). Although at its inception, its focus was to provide a post-secondary education to citizens of Botswana in order to build a public service, as the country's public service began to reach its capacity in 1990; UB needed to expand its mandate to also focus on research. To do this, the university increased its graduate programmes as well as began to explicitly encourage its academics to participate in research activities in addition to their teaching activities (http://www.ub.bw/content/id/1895/About-UB/).

As will be discussed in the sections below, UB has various organisational units, including a senate that implements institutional strategies, policies, plans, and processes. The Senate is governed by the Council and is comprised of two sub-committees: The Academic Programmes Review and Planning Committee (APRPC) and the University Research Committees (URC). Several units of the university represent it externally, such as the UB Foundation, the UB Business Clinic, the Centre for Continuing Education, the Office of International Education and Partnerships, and seven research centres, as well as the Okavango Research Institute. Its internal interface units are the Office for Research and Development (ORD), the Centre for Academic Development (CAD), the University of Botswana Library, and the School of Graduate Studies (SGS).

UB's Institutional Structure

The University of Botswana's overarching governing body is the University Council. This group has the ultimate responsibility of guiding the University's progress in achieving its goals. Both key national and international figures, as well as senior personnel within the University, make up the University Council. As mentioned above, Senate, the next level of the academic hierarchy, is governed by the University Council and is responsible for governing all of the university's academic

matters such as establishing all academic policies and academic policy documents, designing organisational structures to implement policies, as well as determining processes that organisational structures should use to implement new policies (http://www.ub.bw/content/id/1895/About-UB/).

UB's overarching academic policy document is the institution's strategy policy, commonly known as the *Strategy for Excellence: Strategic Plan to 2016 and Beyond (2008)*. It was approved by Council in 2008, and is aligned with the country's National Development Plan 10. This policy highlights six priority areas that UB's academic mission must focus on: 1) Expanding Access and Participation; 2) Providing Relevant and High Quality Academic Programmes; 3) Strengthening Engagement; 4) Intensifying Research Performance; 5) Improving the Student Experience; and 6) Enhancing Human Resources for Excellence in Delivery. Consequently, all of UB policies and policy documents refer to the University's *Strategy for Excellence*. For example, it can be suggested that the University's Learning and Teaching Policy responds to areas one, two, five, and six of the Strategy, which are all focused on teaching related issues; whereas the University Research Strategy relates to the fourth area of the larger strategy - *Intensifying Research Performance.*

Senate has two sub-committees whose mandates are to facilitate interactions between UB and external and internal actors. The first sub-committee is the Academic Programmes Review and Planning Committee (APRPC). They are responsible for interacting with both internal and external actors to approve new academic programmes as well as review the existing programmes. The second sub-committee is the University Research Committee (URC). It is responsible for processing the University's research policies. Two key documents processed through this sub-committee, currently governing UB academics' research activities are the University's *Research and Development Policy,* which was approved by Senate in 2002 and informed the University's *Research Strategy*, which was approved by Senate in 2008, as well as the *Guidelines for the Establishment and Implementation of Research Institutes and Research Centres,* which was approved by Senate in 2004.

University of Botswana - Patterns of Interaction
This section highlights key university actors (e.g., departments or academic units) as well as examples of interactions between the actors/departments and external actors. As illustrated below, many UB academics are actively engaged with external stakeholders through consultancies and other opportunities.

Faculties and Departments
Actor. The university has seven faculties: Business; Education; Engineering and Technology; Humanities, Science; Social Sciences; and Health Sciences. It also has a School of Graduate Studies which, like the Faculties, is headed by a Dean. The university is home to the Office of Research and Development (ORD), the Centre for Academic Development, the UB library, and the School of Graduate Studies (that act internally). Each faculty and department has a board with members from outside the university. The boards serve a number of purposes, all of which facilitate interaction with the external actors and the community.

Interaction. Faculty/departmental boards, comprised of external community actors, advise the departments on the type of academic courses that stakeholders such as industry and other potential employers of the university graduates require. They also assist the university to place students for internships. One interviewee describes how the boards may help the universities mount community

programs, offering the example of "Dr A [who] is mounting a quantity surveying programme as there is an outcry out there, so the advisory board is critical in linking us with the outside world[3]". While the faculty boards help to like the university externally, different academic departments tend to view/support engagement differently. For example, many of the Deans and Directors that participated in this study felt this arrangement with external stakeholders is limited as it ignores many areas requiring focus for university-community engagement to become stronger. It was partly in this context that the Deans interviewed emphasised the need for a strategy of engagement. Their view was that an engagement strategy would spell out a number of critical needs in the process of external interaction. These would include the allocation of a budget for that activity whether at Departmental, Faculty or Divisional level. It was their view that without it, the separate and isolated cases of collaborating with stakeholders would not have any impact that could be measured and nurtured.

Research Institute

Actor. The Okavango Research Institute (ORI) is currently the only research institute at UB. It is located around the Okavango swamps, in Maun, north-western Botswana, approximately 1900 km north-west of Gaborone. ORI's mandate is to conduct research that is relevant to the community, to the nation, and then to the broader stakeholders.

Interaction. The Okavango Research Institute is active in working with various stakeholders (e.g., government departments, local communities, other national institutions, and international partners). For example, when the Government of Botswana decided to eradicate the Tsetse fly from Northern Botswana, the Okavango Research Institute partnered with the Government of Botswana's Meteorological Services Department to complete the assignment. As a part of a consultancy in, Okavango Research Institute academics worked with the District Councils and with the Department of Water Affairs to manage the water quality of the Okavango Delta. Further, in 2013, Okavango Research Institute was part of a task team that developed the Indigenous Knowledge Systems policy of Botswana. It also interesting to note that researchers in UB's Okavango Research Institute can allocate more time to service (as they are evaluated 60% on their research and 40% on their teaching and service—with little to no teaching as a part of their role).

Research Centres

Actor. A total of seven research centres have been approved by Senate. These are: the Centre for Scientific Research, Indigenous Knowledge and Innovation (CESRIKI); Tourism Research Centre; Centre for Peace Studies; Clean Energy Research Centre; Centre for HIV and AIDs; and the San Research Centre. Out of these seven, four are currently active: the San Research Centre; the Centre for Scientific Research, Indigenous Knowledge and Innovation (CESRIKI); the Clean Energy Research Centre; and the Centre for HIV and AIDs. Each research centre aims is to promote inter-disciplinary research, advance priority research themes, increase external research funding, provide opportunities for more staff to become active in research, and strengthen research training.

Interaction. The San Research Centre (SRC), which aims to support the marginalised San community in Botswana, has engaged with the community, advocating for San rights and working with different San groups to assist them in speaking up for their rights. The San Research Centre has sourced

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funding from various donors in Botswana and Europe to enrol San students in secondary schools, technical colleges, and universities, while also supporting San graduates in securing employment. The Centre has also established the San Youth Capacity Training Programme.

The Centre for Scientific Research, Indigenous Knowledge and Innovation (CESRIKI) has also succeeded in working with poor communities. In 2012, CESRIKI was awarded a consultancy from the Botswana government to work with traditional healers in the communities of Botswana to modernise traditional healing and produce an Indigenous Knowledge Systems policy for Botswana. CESRIKI has also successfully interacted with the community to design telemedicine technology through which patients in rural communities can describe their health conditions to a health practitioner located at a distance using mobile phones. This technology initiative, known as *Matwetwe*, is still in the process of being tested and is undergoing further development prior to implementation.

The Clean Energy Research Centre (CERC) has been active in raising funds for research and carrying out consultancies for clients. In 2011, the CERC secured funding from the German Development Agency (DAAD) to support research on setting up an energy grid across selected countries of southern Africa. The CERC has also carried out a few consultancies for the Botswana Power Corporation (BPC).

The Centre for HIV and AIDS has also been active in raising funds for research and carrying out consultancies for clients. In 2011, the Centre for HIV and AIDS received a research grant from the Bill and Melinda Gates Foundation to fund the Botswana portion of a regional study examining issues of HIV and AIDs among the adolescents in selected southern African countries. The Centre also facilitates research methodology workshops that are funded by the National AIDs Coordinating Agency (NACA), which is a government agency responsible for addressing HIV and AIDS issues in Botswana.

Support Units

Actor. The key support units at UB are the Centre for Academic Development (CAD), which is responsible for conducing programme reviews and overseeing external examinations; the Office of Research and Development (ORD), which is responsible for coordinating, facilitating, and supporting research activities; the Office of International Education and Partnerships (OIEP), which is responsible for implementing the University's internationalization policy; and the Centre for Continuing Education (CCE), which is responsible for facilitating distance education). Each of these four entities is headed by a Director who reports to the Deputy Vice Chancellor for Academic Affairs. The minor units in this section are the Business Clinic and the Legal Clinic. Each of these clinics has a Coordinator who reports to a Dean and a relevant Head of Department.

Interaction. The Office of Research and Development's Commercialisation Unit works to translate university research outputs to stakeholders, linking the university with a number of partners (e.g., industry for purposes of licensing technologies that may already be at the level of licensing, the Botswana Innovation Hub where business leaders need to arrange partnerships with researchers for the production of their goods and services, and with government offices that deal with Intellectual Property). For example, the Botswana Innovation Hub (BIH) has asked the University to partner with it to identify researchers that the companies that have registered within the BIH must work with to conduct cutting-edge research in the areas of Biotechnology, Mining, Renewable Energy, and

Information and Communication Technologies (ICTs).

The OIEP is responsible for coordinating staff and student exchanges between UB and its partner universities. OIEP also works with ORD to initiate international research collaboration. While OIEP focuses building academic partnerships, it does not involve local communities.

The Centre for Continuing Education (CCE) offers distance education courses to 580 students studying remotely, which is a way of connecting with people (particularly public servants) in communities across Botswana.

UB's Business Clinic assists community members who are in need of business assistance and cannot afford to pay for such services. Community members can gain assistance with either setting up a small micro or medium enterprises (SMMEs) or addressing business-related challenges they experience while running their SMMEs. Services are provided to the community by volunteer staff and students (without legal binding or university endorsement).

UB's Legal Clinic provides community members with legal assistance, who cannot afford such services. . Similar to the Business Clinic, these services are provided on a voluntarily basis by UB staff and students (without legal binding or university endorsement).

University Consultancies

Actor. Findings from the mapping study illustrate that consultancies are a key way in which UB academics interact with external organizations. Consultancies, which can be institutional or private, provide services to the external actors/clients for a fee. Past external partners/clients include: the Botswana Government, the Botswana Parliament, the UN family, various NGOs, industries, foreign organizations, and parastatal organizations such as the International Conservation Union (IUCN). Consultancies typically involve providing support, training, and/or short term classes (e.g., professional or specialized courses) to the external partner.

Interaction. UB carries out a variety of consultancies. For example, in 1999, a team of UB consultants supported the Botswana Government in reorganizing the Ministry of Local Government, Lands and Housing into two separate ministries. This consultancy resulted in the development of two ministries: one for land and one for housing. In 1999, university academics supported the Botswana government in setting up a minimum wage for agricultural workers in the country. This consultancy brought about a parliament legislation that set a minimum wage for agricultural workers in the country. In 2000, UB academics supported the Botswana parliament in developing a non-credit course on research methodology to support parliamentarians in developing research skills.

Patterns of interaction with external actors

In addition to examining policy documents and analysing findings from open-ended interview with members of UB's senior administration, this study also relied on a survey questionnaire to study UB academics' patterns of interaction or non-interaction with external social partners. As was discussed in this report's methodology chapter, and illustrated below, the weighted average index (WAI) quantitative analysis method was used to analyse findings from these surveys. Specifically, we sought to understand with which social external partners UB staff engage most and least frequently, the most and least important types of relationship to emerge from such interactions, and the most

typical and atypical outputs to come from these interactions. These findings are discussed in detail below.

The weighted average index illustrates that UB academics engage most frequently with academics at other universities in Africa (2.61), followed by interactions with international universities (2.58), interactions with national universities (2.55), interactions with national government departments (2.53), and interactions with schools (2.43). Furthermore, the level of frequency with other important external social actors for UB academics, as identified by the WAI analysis, include funding agencies (2.38), district councils and regional government departments (2.37), clinics and health centres (2.29), national regulatory and advisory agencies (2.28), individuals and households (2.21), and local government agencies (2.13) (Table 4.2).

Table 4.2 WAI on Interactions with External Social Actors in Descending Order

External social actors	Not at all	Isolated instances	Moderate scale	Wider scale	W	WAI
Universities in Africa	18	73	61	36	491	2.61
International Universities	17	76	62	32	483	2.58
National Universities	26	65	63	33	477	2.55
National Government Departments	29	56	80	25	481	2.53
Schools	32	61	80	17	462	2.43
Funding Agencies	23	84	58	17	433	2.38
District Councils/Regional government departments	37	62	73	17	448	2.37
Clinics and Health Centres	60	44	56	30	436	2.29
National Regulatory and Advisory agencies	35	80	60	14	431	2.28
Individual and Households	52	64	55	18	417	2.21
Local government agencies	58	63	55	14	405	2.13
Specific local community	54	78	40	16	394	2.10
Non-Governmental Agencies	63	63	50	13	391	2.07
Welfare agencies	66	61	52	10	384	2.03
Development Agencies	54	81	50	5	386	2.03
Civic Associations	68	71	42	8	368	1.95
Small Medium and Micro Enterprises	78	62	32	15	358	1.91
Community Organizations	72	72	35	9	357	1.90
Trade Unions	74	69	34	10	354	1.89
Religious Organizations	81	61	34	13	357	1.89
Large National Firms (Debswana, DTCB)	76	69	31	12	355	1.89
Sectoral Organizations	73	80	31	6	350	1.84
Social Movements	86	61	32	9	340	1.81
Legislature	81	69	35	4	340	1.80

Political Organizations	93	58	25	14	340	1.79
Multinational Companies	95	57	26	12	335	1.76
Small Scale Farmers	104	44	29	12	327	1.73
Commercial Farmers	102	56	26	6	316	1.66
Total	1707	1840	1307	427		
1=Not at all, 2=Isolated instances, 3=On a moderate scale, 4= On a wider scale						

In contrast, commercial farmers (1.66), small scale farmers (1.73), multi-national companies (1.76), political organizations (1.78), and legislature (1.79) are the least likely external social actors with whom academics at the University of Botswana interact.

The most important types of relationships to emerge from external social partner interactions as identified by UB academics were those geared towards the education of students to be socially responsive (2.96), those geared towards work integrated learning (2.87), service learning (2.61), continuing education or professional development (2.61), customized training and short courses (2.55), and alternative modes of delivery (2.54) (Table 4.3 and 4.4).

Table 4.3 Weighted Average Index (WAI) for Types of Relationships in Descending Order of Importance

Relationship type	Not at all	Isolated	Moderate	Wide	W	WAI
Education of Students to be socially responsive	12	40	81	56	559	2.96
Work Integrated Learning	21	43	76	49	531	2.81
Service Learning	15	52	81	37	510	2.76
Continuing Education or Professional Development	15	71	71	29	486	2.61
Customised Training and Short Course	25	65	69	30	482	2.55
Alternative Modes of Delivery	38	55	51	45	481	2.54
Collaborative Curriculum Design	34	70	64	19	442	2.36
Student Voluntary Outreach Programme	45	59	65	20	438	2.32
Monitoring and Evaluation and Needs assessment	34	79	57	18	435	2.31
Policy Research and Advise	40	69	62	18	436	2.31
Collaborative R & D projects	40	73	59	16	427	2.27
Research Consultancy	44	72	57	15	419	2.23
Community Based Research Projects	48	72	48	20	416	2.21
Participatory Research Networks	51	68	57	13	410	2.17
Technology Transfer	53	75	51	9	392	2.09
Contract Research	52	77	51	8	391	2.08

Clinical Services	79	48	43	19	380	2.01
Expert Testimony	75	61	38	12	359	1.93
Design and Testing of New Interventions	84	50	39	14	357	1.91
Designing and Testing of New Technologies	87	48	37	15	354	1.89
Joint Commercialization of a new product	119	32	24	10	295	1.59
Total	1011	1279	1181	472		

Table 4.4 WAI on Channels of Communication in Descending Order of Importance

Channels of communications	Not at all	Isolated instances	Moderate	Wide scale	W	WAI
Public Conferences, Seminars or Workshops	15	25	66	81	587	3.14
Students	10	47	66	65	562	2.99
Informal Information Exchange	13	58	78	38	515	2.75
Training and Capacity Development	23	68	71	26	476	2.53
Reports and Policy Briefs	28	69	64	26	462	2.47
Popular Publications	28	77	68	15	446	2.37
Participatory or Action Research Projects	35	75	58	18	431	2.32
Interactive Websites	44	70	54	19	422	2.26
Oral or Written Testimony	44	71	53	19	421	2.25
Radio Television or Exchange	44	75	51	18	419	2.23
Demonstration Projects or Units	47	61	71	9	418	2.22
Cross Disciplinary Networks with Social Partners	44	82	44	16	404	2.17
Interventions and Development Programmes	53	70	50	14	399	2.13
Research Contracts and Commissions	57	70	54	7	387	2.06
Technology Hubs or Incubators	66	64	49	8	373	1.99
Technology Development and Application Networks	80	64	31	13	353	1.88
Software development	85	62	30	10	339	1.81
Spin off from the University	92	70	19	5	309	1.66
Patent Application and Registration	121	37	23	7	292	1.55
Total	929	1215	1000	414		

In terms of the most typical types of outputs to emerge from relationships with external social partners, findings from the WAI analysis that they are the following: graduates with relevant skills and values (3.07) and academic publications (3.07), closely followed by dissertations (2.97).

Academic collaborations (2.77) and reports, policies, and popular publications (2.75) were identified as some of the next most important outputs arising from interactions with external social actors (Table 4.5 and 4.6).

Table 4.5 Weighted Average Index on Output Due to External Social Actors in Descending Order

Outputs	Not at all		Moderate		W	WAI
Graduate with relevant skills and values	26	19	50	93	586	3.12
Academic Publications	18	34	52	83	574	3.07
Dissertations	21	36	58	73	559	2.97
Academic Collaborations	17	53	73	44	518	2.77
Reports Policies and Popular Publications	29	47	53	58	514	2.75
Community Infrastructures and Facilities	66	67	34	21	386	2.05
New or Improved Products	67	70	33	18	378	2.01
New or Improved Process	69	67	32	18	371	1.99
Spin off Companies	73	65	32	17	367	1.96
Cultural Artefacts	94	43	29	20	347	1.87
Scientific Discoveries	102	43	29	14	331	1.76
Total	582	544	475	459		

Table 4.6 Weighted Average Index (WAI) on Outcomes and Benefits from Interactions

Q5 No outcomes	Not tall	Isolated	Moderate	Wide	W	WAI
Improved Teaching and Learning	12	26	85	64	575	3.07
Training Skills and Development	17	60	66	44	511	2.73
Public Awareness and Advocacy	22	46	81	38	509	2.72
Academic and Institutional Reputation	15	75	71	26	482	2.58
Participatory Curriculum Development	20	63	80	23	478	2.57
Relevant Research Focus and New Research Projects	23	69	72	22	465	2.50
Theoretical and Methodological Development in an Academic Field	25	74	63	26	466	2.48
Community Based Campaigns	42	49	66	31	462	2.46
Intervention Plans and Guidelines	35	63	65	24	452	2.42
Policy Interventions	34	74	53	26	445	2.38
Incorporation of Indigenous Knowledge	36	72	57	23	443	2.36

Improved quality of life for individuals and communities	39	70	53	23	430	2.32
Improved Livelihoods for individuals and communities	37	72	61	16	428	2.30
Cross Disciplinary knowledge production to deal with multi-faceted social problems	32	91	43	22	431	2.29
Community Empowerment and Agency	46	66	56	18	418	2.25
Community Employment Generation	55	59	50	24	419	2.23
Regional Development	47	72	57	12	410	2.18
Firm Employment Generation	72	44	51	18	385	2.08
Novel Use of Technology	71	53	43	19	382	2.05
Firm Productivity and Competitiveness	78	47	46	16	374	2.00
Total	758	1245	1219	515		

The types of relationships that produce outputs, such as joint commercialization of a new product (1.59), design of new technologies (1.89), design and testing of new interventions (1.91) were viewed as the least important types of relationships pursued by academics at the University of Botswana with external social actors. Viewing designing of new technologies as least important is a manifestation of the fact that UB has not as yet reached the level of producing new technologies.

Outputs which suggest intensive research and innovation activities such as spin-off companies, new or improved processes, and scientific discoveries were ranked very low, again as a confirmation that UB is not research intensive in the area of technology design and commercialization. Instead it appears that survey respondents with PhD degrees tend to focus their energies toward producing graduates with relevant academic skills, producing academic publications, supervising students' dissertation, and forging academic collaborations with academics at other African, international, and national universities, most likely to strengthen the above mainstream research activities. In addition, attendance at conferences, workshops, and seminars by academics of all ranks was shown to be occurring on a wide scale.

University of Botswana – Key Findings
The section offers an overview of conditions (including policies, institutional structures, and programs) enabling and constraining interaction between the University of Botswana and external social actors. Findings in this section come from open-ended interviews with senior management at the University; surveys of academic staff in the University's 52 departments; and document analyses of key policies governing the University.

1. **The university mandate supports community engagement.** Approved by the Senate Council in 2008, the University's *Strategy for Excellence* highlights six institutional priorities: (1) Expanding Access and Participation; (2) Providing Relevant and High Quality Academic Programmes; (3) Strengthening Engagement; (4) Intensifying Research Performance; (5) Improving the Student Experience; and (6) Enhancing Human Resources for Excellence in Delivery. Point 3 of this document specifically encourages engagement of the university's

actors.

2. **Senior administrators support community engagement.** The Deputy Vice Chancellor for Academic Affairs at UB, for example, had the view that engagement is critical to the mission of UB and the institution needs not only an engagement strategy but first needs to instil a clear understanding of community engagement among staff as opposed to an understanding of community service as a unidirectional phenomenon.

3. **More formalized university-based supports, structures, and funding is needed to support external engagement efforts.** While UB policies promote engagement, there are no concrete institutional structures in place to implement these policies. At present, UB does not have an engagement strategy, a senate level committee on engagement, or an engagement office, or to support the institution's relations with external social actors. Further, UB does not have any formal guidelines/supports for academics looking to engage with external stakeholders. Developing appropriate policies and structures would not only bring about engagements but also address the concern in point 2 above regarding the university and its staff having a clear understanding of what is meant by service, outreach, and community engagement. At this point, the University only has a statement in its main policy document referring to engagement. None of the lower policies or institutional structures refer to this activity explicitly.

4. **Most external interactions are undocumented**. Interactions are often brought about bilaterally between the researcher and the client without informing the university about the interaction. In many cases, management is not aware of these interactions. This makes it difficult to determine the number of interactions, monitor the interactions, or coordinate/plan/support future interactions. One of the reasons academics are dissuaded from reporting their interactions is that they would have to pay the university a portion of their fees. For private consultancies, the consultant receive 80% of the consultancy fee while the university receives 20% (as per the *Policy Relating to the Undertaking of Private Work by University Staff,* approved 2001). Note for institutional consultancies, the university share of the fees is negotiated with/by the university.

5. **UB's *Performance Management System (PMS) does* not prioritize/reward academic staff for community engagement activities.** While the system lists teaching, research, innovation, and service as key performance areas, the university's current system measuring staff's performance offers much higher rewards for research activities than those related to community engagement. Currently, the PMS does not recognize reward its staff for engaging external actors.

6. **Most UB stakeholders are other academic institutions (as facilitated by the work of the OEIP).** As a teaching and research university, UB deals mainly with external academic institutions and organizations, with minimal interaction with non-academic external actors. With that, it is not surprising that university respondents with PhD degrees focus their energies towards producing graduates with relevant academic skills, producing academic publications, supervising students' dissertation, and forging academic collaborations probably in an effort to strengthen those activities recognized by the University's Performance Management System. Attendance at conferences, workshops and seminars by academics of all ranks was shown to be occurring on a wide scale.

7. **Most university outputs are research based.** These findings can be explained by the strong teaching and now research mandate of the university as well as the activities that are most valued in the institution's Performance Management System as stated in the above bullet.

8. **Educating students to be socially responsive is a key priority for academics at UB.** When surveyed, UB academics reported the most important types of relationships were those geared towards the education of students to be socially responsive (2.96), those geared towards work integrated learning (2.87), service learning (2.61), continuing education or professional development (2.61), customized training and short courses (2.55) and alternative modes of delivery (2.54). The types of relationships that are geared towards joint commercialization of a new product (1.59), designing of new technologies (1.89), design and testing of new interventions (1.91) were viewed as the least important types of relationships pursued by academics at the University of Botswana with external social actors. Viewing designing of new technologies as least important is a manifestation of the fact that UB has not as yet reached the level of producing new technologies.

9. **Obstacles and barriers relate to funding, time and university policies and practices**

   UB academics experienced the strongest barriers to interaction as financial [lack of funding (3.4) and sustainable funding (3.2), and competing priorities on their time (3.27) (Table 4.7). Most significantly though, there is much that the university could do to support and promote interaction. Academics perceive the absence of clear university policy and structures (3.12), the fact that institutional recognition systems do not reward (3), and that administration systems do not support interaction (3), as major barriers constraining their interactive activity.

Table 4.7 Important obstacles and challenges on academic interactions WAI

Obstacles and challenges	Not important	Slightly important	Moderately Important	Very Important	W	WAI
Limited Financial Resources	17	14	34	123	639	3.40
Lack of Clear University Policy and Structures to promote interaction	15	33	54	85	583	3.12
University Administration does not support interaction	17	31	63	76	572	3.06
Competing Priorities on time	7	31	53	96	612	3.27
Too few academic staff	22	28	55	81	567	3.05
Institutional Recognition Systems do not reward interaction	14	33	65	75	575	3.07
Risks of student involvement with external social actors	36	33	70	48	504	2.70

Tensions between traditional and new academic paradigms and methodologies	33	40	55	60	518	2.76
Sustainable External Funding	7	40	53	87	594	3.18
Negotiating access and establishing a dialogue with external social actors	16	38	71	62	553	2.96
Unequal Power relations and capabilities in relation to social partners	23	37	67	61	542	2.88
Legal Problems	23	44	71	49	520	2.78
Lack of Mutual Knowledge about partners needs and priorities	23	44	61	56	518	2.82
Total	253	446	772	959		

Higher Education in Botswana

By examining how academics at UB engage with external actors, a lot can be learned about how academics in public universities interact with external partners. While UB academics have been fairly active in formal consultancies with industries, firms, and government ministries, we also learned it is common practice in Botswana for Botswana industries to contact universities outside of the country to carry on larger projects. In surveying UB staff, particularly through the open-ended interviews with Senior Management and the analyses of policy documents, it was striking to discover that UB's overarching policy document, the University's Strategic Plan mentions strengthening engagement but there are no other formalized policies, structures, or supports within the institution, nor an agreed upon definition of engagement at the university level is in existence to encourage academics to engage in such activities. In contrast, mid-level policies and institutional supports, such as the University's Performance Management System and the *Policy Relating to the Undertaking of Private Work by University Staff* either undermine engagement because, in the case of the UB's PMS, academics are not awarded points for engaging in community activities, or hinder the formal reporting of engagement as academics need to pay a component of the consultancy to the university to cover overhead fees. Therefore, most interaction between university members and external actors occur outside of institutional frameworks, which means they are not accomplished through official channels and they are not captured nor monitored by university management. This point is taken up for further analysis in the following chapters of this study, particularly in the way the university academics negotiate—or perhaps circumvent—their own institutional policies by attempting to reshape government policies by engaging with community members outside of formal structures and supports.

Chapter 5. Kuang Hoo Community Trust: an interaction to mobilise natural resource-based projects

Introduction

This case study examines the University of Botswana San Research Centre's collaboration with the Kuang Hoo Community Trust. These interactions between university researchers and those in the informal sector aimed to support the livelihood of a marginalised and remote community in the western part of Botswana. More particularly, the project aimed to support the mobilisation of this historically marginalized group's Community Trust, which was intended to support the San people, who had been relocated from their homes in the Central Kalahari Game Reserve [CKGR] (that had a rich natural resource base) to a traditional Tswana village setting. This relocation, which the Government of Botswana intended to improve the San's standard of leaving, meant the San people no longer had access to their traditional ways of sustaining themselves.

The San (aka Basarwa, Bushmen) are recognised as the most impoverished, disempowered, and stigmatised ethnic group in southern Africa after being removed from their traditional homes in Botswana's Central Kalahari Game Reserve in 1997 and 2002 respectively. The interactions in this case study brought about social innovation, empowering community members as key agents of change in the inclusive development process. The project saw members of the Kuang Hoo Community Trust liaising with external community partners to mobilise the Community Trust, to identify community needs, and to respond to these needs with tangible solutions. While the project was "people-centered" and empowered community members to serve as change agents, in many ways the interaction between the University's San Centre and the community did not assist the community to devise sustainable, formally structured solutions to address its context-specific challenges in systematic ways.

Overview of the interaction

This case study details the efforts of members of the Kuang Hoo Community Trust—working in partnership with the UB San Research Centre and others—to mobilise four specific enterprises intended to make up the Kuang Hoo Community Trust. The interaction began in January, 2012 when the Kgosi[4] (see Figure 5.1 below) of Kaudwane contacted wildlife officers at the Department of Wildlife and National Parks at the Molepolole regional office. The Kgosi asked the Wildlife officers to approach the UB San Research Centre in order to have the Centre help the community in addressing issues they were facing in getting their Trust's enterprises to be fully functional. The Wildlife officer sent a letter of introduction to the University's San Research Centre to seek assistance in mobilising the Kuang Hoo Community Trust. As mentioned above, the Trust is comprised of four specific enterprises that are intended to address the livelihood issues the San people living in Kaudwane face after being relocated to this new setting from the CKGR. These enterprises are the following: a leather processing enterprise; a community user zone; a campsite; and a craft shop. The Kgosi was seeking support from the San Research Centre to identify the problems the Community Trust was facing in making these government-sponsored, natural resource-based enterprises fully operational.

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[4] Kgosi is the Setswana word for chief.

This interactions between the Kuang Hoo Community Trust (including the chief) and the UB San Research Centre involved a variety of meetings aimed at identifying and responding to the needs of the community. Most notably, the UB San Research Centre acted as an intermediary, coordinating a benchmarking exercise between the Kuang Hoo Community Trust and the Nyae Nyae Conservancy, a San group in Namibia that has a fully functioning Community Trust in this neighbouring country. As a part of this bench-marking session, the Botswana community worked with and learned from a San community with a similar history. As a part of this interaction, the Kuang Hoo Community Trust was able to better understand their needs and how to mobilise their Community Trust.

While this interaction did empower community members and did position some community members to become leaders in the process, it struggled to offer a context-specific response that addressed the community's context-specific needs. This case also highlights a disjuncture between the on-the-ground, small scale interventions sought by community members and the need for more systemic, inclusive change at the regional or national level. This case raises questions about how universities can bring about systemic change while also honouring the local, everyday needs of community members.

Figure 5.1 *Kgosi of Kaudwane (neck tie) with some of the members of KHCT committee (Photo: Bolaane, 2013).*

Community. The case focuses on an interaction between the University's San Research Centre and members of the Kuang Hoo Community Trust, which is comprised of San people who were relocated to Kaudwane village by the Government of Botswana from the Central Kalahari Game Reserve in 1997 and 2002 respectively. The majority of the San people who were relocated to

UNIID-AFRICA PROJECT HRSC

Kaudwane originally came from the settlements of Metseamanong, Mothomelo, Kikao, Gope, and Gugama within the CKGR (see Figure 5.2 below). Kaudwane is an isolated community in the Kalahari Desert, which is found in the western part of Botswana. The community is situated about five km from the Khutse Game Reserve, and about 220 km northwest of Gaborone, the capital city. This remote location in Botswana means the community is relatively isolated from urban infrastructure and mainstream economies as the nearest village, Salajwe, is 40 km away. Kaudwane has a population of 1,084 (Botswana Government, 2011), and is home to two of Botswana most ethnically marginalized tribes – the San and Bakgalagadi people. The road between Salajwe and Kaudwane is a gravel road in poor condition that can only be accessed by four wheel drive vehicles. These vehicles are typically used to transport tourists or staff from the Department of Wildlife and National Parks, police officers, district council officers, and healthcare workers from the clinic. Kaudwane village is under the jurisdiction of a Kgosi, who holds traditional and tribal authority and works under the direction of the chief in Molepolole, which is the administrative centre of the district. In terms of infrastructure, the community has a primary school, health post, local authority (kgotla), multi cooperative, wildlife office, and district council office.
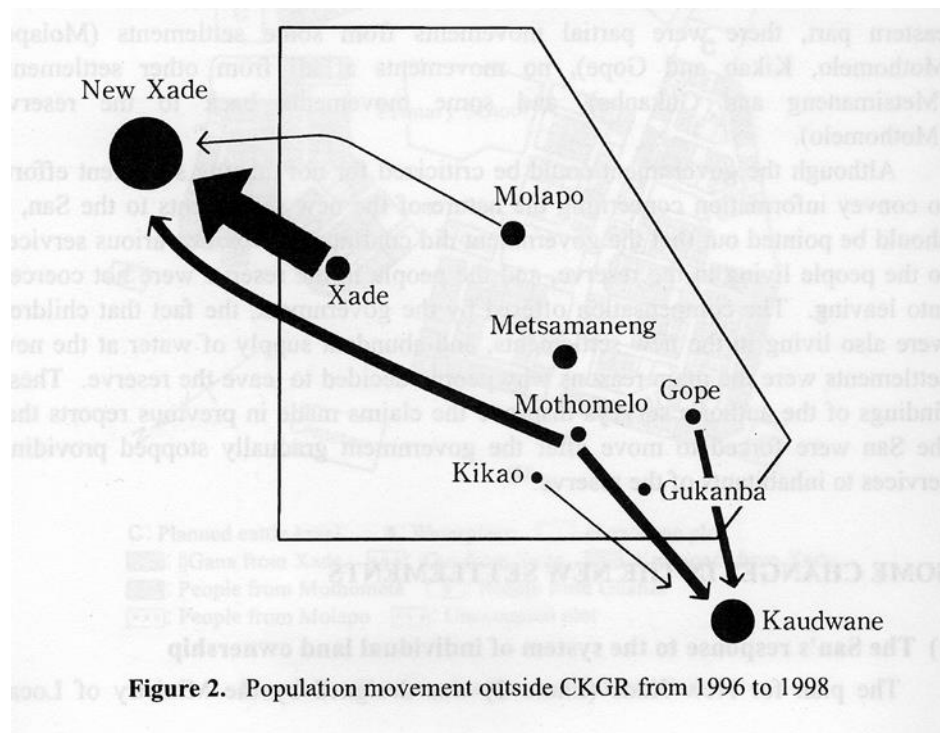

Figure 2. Population movement outside CKGR from 1996 to 1998

Figure 5.2 *Relocation process from CKGR between 1996 and 1998.*

Community livelihood issue. Between 1997 and 2002, Kaudwane became home to the San people, who were relocated by the Government of Botswana from their homes in the Central Kalahari Game Reserve. Since the initial relocation in 1997, approximately 1739 San people have been relocated to new settlements (Good, 1999; Hitchcock, 2002; 2006; Resnick, 2009; Saugestad, 2006). Two of the main reasons the Government of Botswana decided to relocate the San people were 1) to protect natural resources located in the CKGR, particularly the wildlife; and 2) to give San people access to public services in Botswana, such as healthcare and education, which was intended to improve their standard of living and "modernise" the San people (Saugestad, 2005; 2006). In reality, relocation of the San people from their original nomadic life in the CKGR to the Tswana village setting has been

incredibly difficult, particularly because the San people no longer have access to the natural resources found in the CKGR that they used to make sustain themselves.

The San people of Kaudwane are incredibly marginalised. They have struggled to adjust to settlement village life, as well as to live in a rural setting with limited/depleted natural resources and with few opportunities and economic resources. In the new context, their traditional ways of knowing and doing—that they used to support their livelihoods—are rendered inadequate. For example, the San people, who had long relied on hunting and gathering for their economic livelihoods (Hickey & Toit, 2007; Hitchcock, 1995; Silberbauer, 1965), no longer have the option of doing so legally.

Since the San were relocated out of the CKGR, the majority of the population have not been able to accrue any assets, secure formal employment, and be involved in any income-generating projects. There are high rates of unemployment, limited employment opportunities, high rates of youth unemployment, and high school dropout rates (Bolaane, 2004; Bolaane, 2013; Bolaane, Chebanne, Lekoko & Hiri, 2013; Bolaane, 2014). There are also low levels of literacy and the San people lack the technical education and vocational training needed for employment in technical fields. The San people have limited to no access to land resources (e.g., wildlife resource) as well as challenges with health and malnutrition and other livelihood problems, including, limited access to hospitals, high levels of crime, alcohol abuse, and teenage pregnancy. Their social exclusion as an ethnic minority has also contributed to their marginalisation as they tend to benefit less from livelihoods opportunities and resources than members of other tribes located in the Kaudwane community.

Community Trust. The Kuang Hoo Community Trust (established in 1999) has been a legally constituted community based organisation with a registered constitution since 2006. The Community Trust is overseen by an active committee of 11 members (including the village Kgosi) The Trust receives funding through the Government of Botswana's Community Based Natural Resource Management (CBNRM) policy. The Community Trust is comprised of four specific projects: 1) **a leather processing enterprise:** this project focuses on tanning leather and making various leather products. The leather comes from skins of wildlife often found in the CKGR and the tanning process is completed by using the Letopo plant, which is found both inside and outside of the CKGR. Once the leather products are produced, the Trust intends for them to be sold in its curio/craft shop; 2) **a community user zone:** this enterprise provides the Community Trust and its clients with resource use rights to the CKGR to conduct photo-tourism visits; 3) **a campsite:** this enterprise is a campsite for tourists to camp on the border of the CKGR but extends to the Khutse Game Reserve area; 4) **a curio/craft shop:** This shop is located outside of the CKGR but will sell curio, including leather products made from wildlife and domestic skins and tanned in the abovementioned leather processing enterprise. These skins are attained by Community Trust members who initially had access to special licenses to hunt wildlife (either inside or outside the CKGR).

These four components of the Community Trust were funded by the Government's Community Based Natural Resource Management Policy to provide relocated members of the San community in Kaudwane with a livelihood – something that had been taken away from them because of their relocation from the CKGR. After experiencing various challenges trying to get the Trust's four enterprise to be fully functional, they decided to contact the University of Botswana's San Research Centre through an officer in the Department of Wildlife and Natural Resources. The Trust, for a variety of reasons, was struggling to implement any of these components of the Trust past the conceptual stages. Because of these challenges, the Trust was losing members of its group to other

sources of employment such as the Ghaghoo Diamond mine, which had recently opened in the region. They were seeking these other sources of employment because they needed to find other means to address their livelihood issues.

UB San Research Centre. The UB San Research Centre is dedicated to collaborative research—with and in support of the San community. The UB San Research Centre focuses on research, programming, capacity building, and outreach activities to support San people. In partnership with the Kuru Family of Organisations, the San Research Centre works to support the development of competent and responsible San leadership and development initiatives. The Centre also aims to foster an understanding of the San people's situation in Botswana, particularly their marginalized status. The main objectives of the San Research Centre are: (1) to promote research and teaching on the cultural, historical, social, economic, and legal situation of the San of southern Africa; (2) to contribute to capacity building of San students and researchers; and (3) to promote outreach activities and facilitate community engagement (University of Botswana, 2010). Since the mid-1990s, the Centre has been conducting university research *among* and *with* the San.

Interaction timeline

The Kgosi of Kaudwane initiated contact with the UB San Research Centre through a Wildlife and National Parks officer in January, 2012. AT this time, the Kgosi contacted Wildlife Officers at the Department of Wildlife and National Parks at the regional level of the government, located in Molepolole, to have them approach the UB San Research Centre and ask for the Centre's assistance in addressing their livelihood problems. This assistance was to specifically come from having the San Centre researchers help them address the challenges they were experiencing in mobilising the various enterprises of their Community Trust. The Kgosi was particularly concerned about the state of the Trust for two reasons. First, in 2012, the Kuang Hoo Community Trust had secured land for the campsite enterprise, which is located between the Kaudwane village and the Khutse Game Reserve; yet, the Trust had not been able to use the land because of zoning issues. Second, the Trust had built the craft shop but it was not yet operational because it had been unable to secure a business license. Therefore, it had yet to provide the Community Trust members with any type of livelihood. Contact with the San Centre was established by the Wildlife officers sending an official letter to the University of Botswana's San Research Centre on January 17, 2012 requesting the Centre's assistance. The San Research Centre accepted the request to collaborate with the community in February of 2012, and arranged a visit to Kaudwane.

The interaction officially began in March, 2012 when a meeting was held in Kaudwane between the members of the UB San Research Centre, officers from the Department of Wildlife and National Parks, and members of the Kuang Hoo Community Trust. During this meeting, the San Research Centre and the Department of Wildlife and National Parks agreed to work together and support the Kuang Hoo Community Trust committee members in networking and collaborating with other San groups (Jo/'hoansi). At this point, the two groups began to arrange a benchmarking trip for members of the Community Trust to travel to another San community in Namibia that had a successful Community Trust in operation in order to address its own livelihoods issues in Namibia. This benchmarking trip was seen as a tool to empower members of the Kuang Hoo community to address their challenges and begin to manage their own projects.

Shortly after this initial meeting in March, 2012, separate meetings were also held between members of the UB San Research Centre and Kuang Hoo Community Trust Committee as well as between officers of Department of Wildlife and National Parks and members of the UB San Research

Centre. These independent meetings were initiated by the UB San Research Centre to learn more about local livelihood issues.

From June 13th to 18th of 2012, a benchmarking exercise was held with the Tsumkwe San Community in Namibia[5] to help members of the Kuang Hoo Community Trust learn from the Tsumkwe community and strategize ways to mobilise and improve their Community Trust enterprises. The Tsumkwe community had much to share as they had experienced similar challenges in running a natural resource-based enterprise. At the benchmarking strategy, the two groups worked together to identify key problems impeding the Kuang Hoo community from moving forward. The following challenges emerged: community members' lack of confidence; difficulties securing a lease for campsite and business license for the curio shop; difficulties securing license to operate the enterprises; lack of funding to develop the campsite and refurbish the curio shop. The Kuang Hoo community members also learned about strategies they could use to improve their enterprises such as ways to develop the community user zone into a living museum; ways to support developments and capacity building; ways to attract tourists; and methods to manage their assets and resources. The benchmarking initiative allowed community members to set priorities for the Trust and to come up with concrete ways to improve their economic livelihoods. The UB San Research Centre served as an intermediary—linking the Kuang Hoo Community Trust with the Nyae Nyae Conservancy—and providing financial support to facilitate the benchmarking exercise.

Following the benchmarking exercise, a stakeholder's workshop was held in Kaudwane in August, 2012. The aim of the stakeholder's workshop was to provide a platform for dialogue, support, and co-operation that brought together all stakeholders to develop competent leadership within the Trust (San Centre Report, 2012). The workshop created provided a meeting point for various key actors in the interaction: members of the San Research Centre; the Kaudwane Kgosi, local councillor, members of the Kuang Hoo Community Trust, members of the Village Development Committee, officers from the Department of Wildlife and National Parks, officers from the Department of Forestry and Range Resources, members of the Local Government (including the District Administration, Planning Unit, Land Board), members of the Local Enterprise Authority, managers from the Kaudwane Primary School; officers from the Department of Veterinary Services, officers from the Department of Social & Community Development, officials from the Ghaghoo Diamonds mine and the Standard Chartered Bank. At the workshop, organisations (including the university) discussed how they should marshal expertise and resources to meet the challenges of the context, particularly the high level of poverty in the government relocation area. Community elders also shared their experiences about being relocated outside of the game reserve.

Nearly one year later, on July 26th 2013, a meeting was held between the UB San Research Centre, the UB academic body, and members of the Kuang Hoo Community Trust. At the meeting, the academic body offered to work with other UB departments to provide technological support to the San community. While they had hoped to be able to involve other UB departments, assistance was not forthcoming as people in other departments at UB were hesitant to support the San community given the complicated and sensitive nature of the research in the context of Botswana. At this

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[5] Nine individuals from the three different groups travelled to the Namibia for the benchmarking exercise: two members of UB San Research Centre (1 man, 1 woman); two officers from the Department of Wildlife and National Parks (1 man, 2 women); and four members of the Kuang Hoo Community Trust (three men, one woman). The UB San Research Centre provided financial support to send members of the San Research Centre and the Kuang Hoo Community Trust. The Botswana Government provided financial support to send the wildlife officers.

meeting, the Kgosi revealed that he was still trying to work with the district land board and council to attain a license for the curio shop.

Throughout the interactions between UB researchers and Kuang Hoo community members, there were some conditions in the community that were viewed to negatively impacting the community and move the Trust's enterprises forward. The first challenge was observed and discussed during one of the UB researchers' visits to the community, which took place on July 26th, 2013. At this time, a Ghaghoo Diamond Mine company vehicle came to collect people from Kaudwane to take them into the CKGR for work. Community Trust members felt private companies were taking away from their own labour potential as some community members had secured temporary employment through private companies, specifically the Ghaghoo Mine, which had recently opened in this region. These Community Trust members, because of the promise of securing a regular income from the Mine, and the challenges faced by the Trust, meant they were not as motivated to participate in or support the Community Trust. The Trust members perceived it as a problem to have people pursuing temporary job opportunities through private companies in the CKGR instead of devoting their time and energy to the Trust's activities.

Another challenge the Community Trust members seemed to feel constrained their enterprise was that another local leather artisan business had become relatively successful in the village. This woman belonged to another marginalized tribe in Botswana – the Bakgalagadi tribe – (although it is a tribe that tends not to be as historically marginalized as the San tribe). This local artisan's success had come from being able to establish links with the urban market. She was now being accused by members of the Trust of stealing its business and hiring San people to make products for her. The Trust's members blamed this women for taking business opportunities from the Trust as they wanted to centralise the Trust and have one major community enterprise (to possibly secure more of the market share).

Both of these examples highlight tensions in the community and raise questions about the capacity to find innovative means to promote inclusive, sustainable development, as the UB researcher(s) often devoted a significant amount of time and energy to smaller-scale, individual problems as opposed to working for systemic or structural changes. For example, in addition to the abovementioned issues, the UB San Centre researcher(s) also spent a significant amount of time trying to find leather goods of one individual artisan in Kaudwane, who reported to the UB researchers that his product had been stolen by Government officials after giving them to a Wildlife official to display them at a local show in Gaborone. While this issue was viewed as an individual problem, it illustrates the challenges the San community members have interacting with government officials and advocating for issues on their own behalf. Similar to the above challenges, it raises questions about how university researchers can work for more sustainable change rather than concentrating on individual issues that continuously arise within the community.

Structure of the interaction
The interaction primarily involved UB San Centre researchers and members of the Kuang Hoo Community Trust as well as officers from the Department of Wildlife. The Kgosi initiated the interaction through officials at the Department of Wildlife to involve the university in the mobilising the Community Trust, and, in turn, work to address the community members' livelihood issues. Figure 5.3 below illustrates the structure and flow of the interaction.
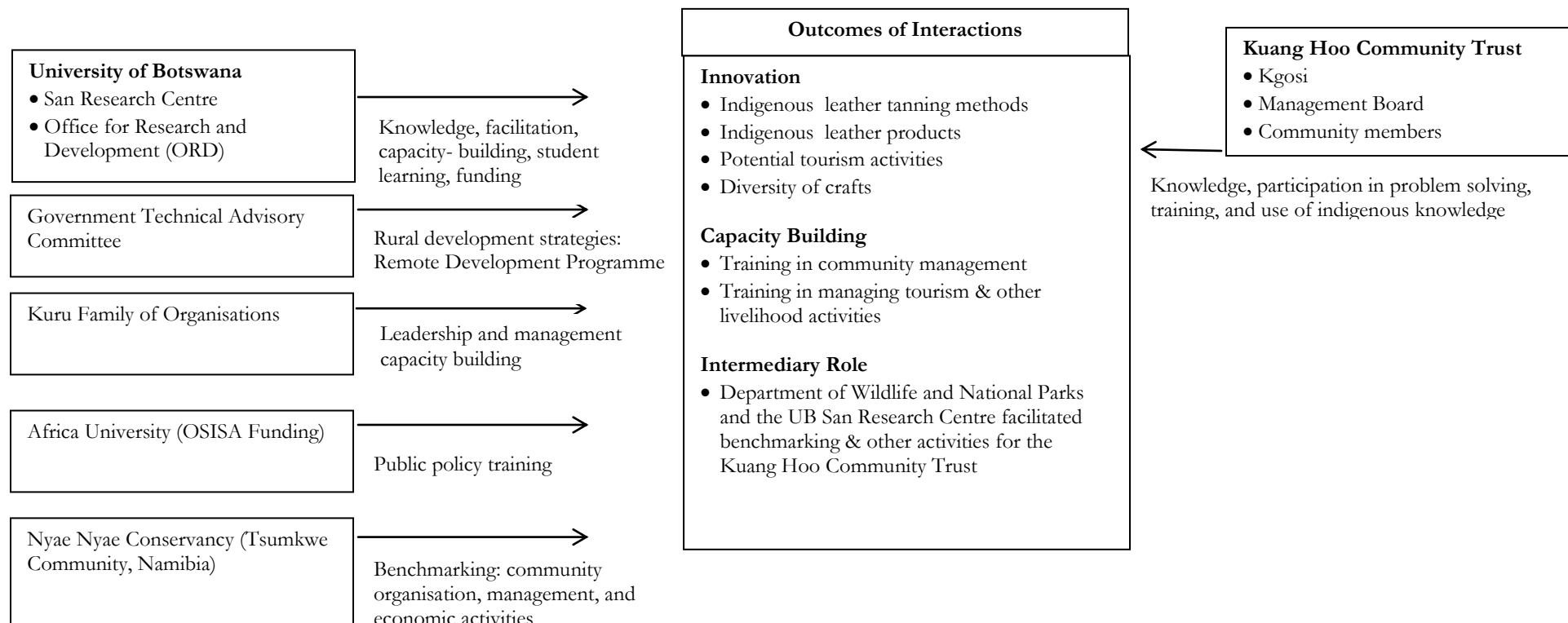
University of Botswana		Outcomes of Interactions	Kuang Hoo Community Trust

University of Botswana
- San Research Centre
- Office for Research and Development (ORD)

Knowledge, facilitation, capacity- building, student learning, funding

Government Technical Advisory Committee

Rural development strategies: Remote Development Programme

Kuru Family of Organisations

Leadership and management capacity building

Africa University (OSISA Funding)

Public policy training

Nyae Nyae Conservancy (Tsumkwe Community, Namibia)

Benchmarking: community organisation, management, and economic activities

Outcomes of Interactions

Innovation
- Indigenous leather tanning methods
- Indigenous leather products
- Potential tourism activities
- Diversity of crafts

Capacity Building
- Training in community management
- Training in managing tourism & other livelihood activities

Intermediary Role
- Department of Wildlife and National Parks and the UB San Research Centre facilitated benchmarking & other activities for the Kuang Hoo Community Trust

Kuang Hoo Community Trust
- Kgosi
- Management Board
- Community members

Knowledge, participation in problem solving, training, and use of indigenous knowledge

Figure 5.3. Structure and Flow of the Interaction

*The table below provides an overview of the ways in which the **primary actors** discussed above, were involved in the interaction:*

The Department of Wildlife and National Parks (regional office, Molepolole, Kweneng district): Oversaw the Khutse Game Reserve; facilitated wildlife quota; oversaw community user zone and campsite; facilitated initial contact with the UB San Research Centre to become involved in the interaction; provided funding for wildlife officers to accompany researchers and community members on benchmarking trip to Tsumkwe San Community in Namibia; participated in community meetings and benchmarking session.

Kuang Hoo Community Trust: Participated in community meetings and bench-marking sessions; worked to fundraise and ensure fencing was completed of camp site and maintenance of curio shop.

Nyae Nyae Conservancy (Tsumkwe Community, Namibia): Hosted benchmarking exercise; shared their own natural resource-based projects with Kuang Hoo Community Trust.

Tribal authorities (bogosi): Initiated (particularly the Kaudwane Kgosi) Community Trust's contact with the UB San Research Centre; participated in community meetings and benchmarking sessions.

UB San Research Centre: Helped to arrange and participated in community meetings and benchmarking session; provided funding for benchmarking session in Namibia; promoted outreach activities and facilitated community engagement; worked to identify action-oriented research outputs to address challenges faced by Kuang Hoo community and engage other UB researchers in the interaction (e.g., Industrial Design, Engineering faculty)

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*The table below provides an overview of **secondary actors** involved in the interaction:*

Government of Botswana: Resettled San community out of Central Kalahari Game Reserve to traditional Tswana village setting in Kaudwane to address San people's rural development issues; implemented various policies and mechanisms to help the San people adjust to their new setting (e.g., Remote Area Development Programme (RADP); Technical Advice Committee to continue giving advice during the stages of each project; Affirmative Action).

Kweneng West Land Board (District level): Provided Kuang Hoo Community Trust with lease

Physical Planning (Kweneng District Council): Facilitated development of the layout design

Social Welfare Department (Kweneng District Council): Worked to address poverty issues

University of Botswana's Office of Research and Development (ORD): Supported the San Research Centre with funds to support interaction with the San community (the UB San Research Centre is under ORD's jurisdiction).

Kaudwane Community (Kgosi & Village Development Committee): Oversaw village development; supported Trust; ensured curio shop was brought to functioning level

San Centere, LEA and RADP: Functioned as the Technical Advisory Committee for Kuang Hoo Trust capacity building by offering workshops, short courses, training opportunities, and other long term courses.

Ghaghoo (Gem) Diamonds: Pledged to fund some of the Trust's projects, including the Community User Zone, but awaiting DWNP.

Standard Chartered Bank: Wanted to be associated with the developments at Kaudwane for social corporate development; funded the billboards for the Community Trust's campsite enterprise (see Figure 5.4 below) (DWNP, Minutes, 28 August 2012)

Figure 5.4 *Billboard donated to Community Trust's Campsite by Standard Chartered Bank (Photo: Hiri, 2013)*

Organisational arrangement and interface structures

There are various university and tertiary education related policies as well as national policies related to rural development and community based natural resource management that have been implemented and institutionally shape interactions between the Kuang Hoo Community Trust and the UB San Research Centre.

The following are the university-level policies and support structures:

- The University of Botswana's mandate is for the university to act in socially responsive ways and participate in community engagement activities. Specifically UB's *Strategy for Excellence* (2008) stresses the importance of taking the university to the community.

- The UB *Strategy for Excellence* (2008), in line with the Government of Botswana's Tertiary Education Policy (2008) projects equity as one of its values, "by ensuring equal opportunity

and non-discrimination on the basis of personal, ethnic, religious, gender or other social characteristics" (p. 5).

- The San Research Centre's mandate is to bring about a fair and inclusive Botswana, and to engage in democratic and inclusive research—among and with the San—to foster rights-based development (Chamane, 2012; Xukuri, 2013).

- The Chief Executive Officer of the Human Resource Development Council (HRDC) also encouraged the University to interact with grassroots communities to address key livelihood issues.

- UB's *Research Policy and Development Policy* (2002) and its *Guidelines for the Establishment and Implementation of Research Institutes and Research Centres* (2008) both call for the university to establish links with external stakeholders, although, as outlined in Chapter 4 of this report, neither document specifically prioritises these links.

- The *University Research Strategy* (2008) promotes interdisciplinary work and international research collaborations, although, as also highlighted in Chapter 4, this strategy does not specifically address the issue of engagement.

- University policies require all research centres to sustain themselves financially after three years from the date of their establishment (*Guidelines for the Establishment and Implementation of Research Institutes,* 2010). This means that they have to establish links with businesses—as opposed to with marginalised groups.

Since the relocation of the San and Bakgalagadi communities from the Central Kalahari Game Reserve, to already established villages, the Government of Botswana has introduced several strategies to address these communities' rural development in order to counter criticisms against the removal of the San communities from their ancestral lands. Below are a list of the national policies and support structures implemented at the governmental level to address these communities' rural development:

- The Government of Botswana's Community Based Natural Resource Management (CBNRM) policy (2009) and the Remote Area Development Programme (RADP) (2010) were two of the key policies implemented to address rural development in Kaudwane. The CBNRM policy (which falls under the revised Rural Development Policy, 2002) aims to improve rural livelihoods while promoting conservation in rich biodiversity areas. This policy encourages rural Botswana communities to become more involved in improving the quality of their lives through development opportunities (National Conservation Strategy, 1990, NDP 8, Wildlife Conservation Policy, 1986 & Tourism Policy, 1990). The CBNRM policy encourages local communities to have direct control over the use (and benefits) of natural resources (e.g., wildlife, veld products) in order to support sustainable growth (Lepper & Goebel, 2010; National CBNRM Forum, 2001). While there are many benefits, the CBNRM lacks some concrete ways of promoting self-reliance and the sustainable use of natural resources in some areas (Denkler, 2009; Mbaiwa, Ngwenya, & Kgathi, 2008; Rozemeijer & van der Jagt, 2000). Furthermore, while CBNRM was introduced to promote sustainable development in local, rural communities (particularly in wildlife management areas), some of the projects are limited in the participation of local actors. Many researchers have found that these policies have failed to enhance community development or empower resilient communities to champion their own development (Boko, 2002; Nthomang, 2004). Note, the RADP was revised in 2009 because of these shortcomings of local community actors benefitting from community development (Botswana Government, 2009).

- The National Development Plan (2009, p. 104-105) aims to support disadvantaged and vulnerable societies by increasing access and equity of education and training.

- The Government of Botswana has also initiated a Presidential Task Force, which seeks to identify gaps needing to be addressed in remote area communities that, if addressed, could build social and economic capital to address vulnerabilities in the livelihood systems of the Remote Area Dwellers (RADs) (Botswana Government, 2010).

- The Botswana Government (through the Ministry of Environment Wildlife and Tourism) officially banned hunting in January, 2014. This ban has affected the ability of the Kuang Hoo community to attain skins to tan and sell as artefacts in their Trust's curio shop. This ban has also led to the withdrawal/decline of hunting licenses, which has undermined the envisioned ways of generating incomes. While there is a possibility that some hunting may have been taking place illegally to obtain game skins, these laws have inhibited the San people's ability to generate a sustainable income as initially planned by the Community Trust.

While various government policies discussed above have may have initially supported the Community Trust's four different enterprises, it is important to highlight that there appear to be contradictory policies between the different government ministries that make it difficult for the Trust to progress in its endeavours. For example, one government ministry funded the leather tanning process while another banned hunting on the game reserve, which impacts the community members' abilities to attain skins to tan and turn into the skins into leather products that could be sold in their curio shop. It is also important to highlight that the government is limited in their capacity to follow up with communities or implement all necessary steps to support a community with their social innovation. For example, the "white elephant" wooden machine (see Figure 5.5 below) that was donated to the leather tanners by the government; yet, the community did not have the knowledge/skills to operate this machine and the government ministry did not follow through with capacity training to help the community members learn how to operate them. These two examples highlight the ways that, at times, government structures constrained this social innovation.

Figure 5.5 *Wooden machine donated to the Community Trust by the Government to support the Trust's leather processing enterprise (Photo: Bolaane, 2013)*

Drivers of the interaction

The Kgosi of Kaudwane was the main driver of the interaction between the Kuang Hoo Community Trust and the two external social actors, the Department of Wildlife and National Parks and the San Research Centre. It was the Kgosi who initially approached the Department of Wildlife and National Parks at the Molepolole regional office to link the community with the University of Botswana's San Research Centre. He specifically asked the Wildlife Officer to make contact with the San Centre because the Community Trust was struggling to attain its goal of having four viable enterprises to address the community's livelihood challenges. The Kgosi was familiar with the San Research Centre because of the assistance the Centre has offered other San community members in a wide variety of issues, particularly the support it has offered San students studying at the University of Botswana.

The UB San Research Centre administrator was driven to respond to this request for assistance and participate in this interaction for social justice reasons as opposed to intellectual or financial issues.

Innovation

This interaction between the Kuang Hoo Community Trust and the University of Botswana San Research Centre aimed to devise various innovations to address the San people's livelihoods challenges that were a result of their relocation from the CKGR to a village setting in a remote

location of Botswana. Social innovation, process innovation, and market innovation have emerged in and through the interactions between the Kuang Hoo Community Trust and the UB San Research Centre. The following sections provide further detail about each of these three types of innovation.

Social innovation is evident in the following:
- Members of the Community Trust were responsible for designing their own development agenda, which is an example of inclusivity in the process (Foster & Heeks, 2013; Cozzens & Sutz, 2012).

- Community Trust members were active participants and key change agents, working with and learning from the San Community in Namibia and serving as project managers for the natural resource-based governmental projects.

- The informal Community Trust (it can be deemed informal as it did not have formal structures) began to develop formal, institutional affiliations, mobilising the Trust to take responsibility for inclusive development.

- The Trust was able to develop and articulate strategies that were responsive to the social and environmental realities of the area.

Process innovation is evident in the following:
- Community members drew from indigenous knowledges by using Letopo plants and Impala skulls to wet/lubricate/soften the leather hide in the leather tanning process to support and improve traditional leather making processes, and, in turn, support income generation and rural development. This process is illustrated in Figures 5.6, 5.7, and 5.8 below.

Figure 5.6 *Letopo plant found in the Kalahari used in the leather tanning process (Photo: Bolaane, 2013)*

Figure 5.7 *Impala skull - teeth are used to clean the skins during the leather tanning process (Photo: Bolaane, 2013)*

Figure 5.8 *Leather tanning process relying on traditional knowledge (Photo: Bolaane, 2013).*

Market innovation is evident in the following:

- Community members moved from being individual leather artisans (working independently without any formal structures/supports) to recognising themselves as members of a wider leather collective (and trying to work as a part of a collective, community-based enterprise).

- Community members, who were leather artisans, developed an awareness of the larger leather market and of their own ability to access the market and market their products nationally/globally as a part of a collective.

- There were improved links between core innovators and innovative intermediaries, which, again, is a key part of innovation (Foster & Heeks, 2013, p. 104)

- Community members, who were leather artisans, had the opportunity to participate in the Ghanzi Craft market—tailoring their products to the global market.

- Community members identified ways for community to work with the Ministry of Arts and Culture to promote arts and crafts and to support the livelihood for individual leather artisans.

Figure 5.9 *Leather products on sale in informal settings (Photo: Bolaane, 2013).*

Knowledge and Skills
The members of the Community Trust were the primary beneficiaries of the interaction with skills/knowledge flowing primarily to them. This interaction saw them stepping into leadership roles, liaising with other community organisations, and managing their project. Through this interaction they were able to develop their leadership and project management capacities. Their growth was primarily related to capacity development (not to technology diffusion, skills transfer or training). They developed and articulated strategies for capacity building, community empowerment, and sustainable development in remote settlements.

Community members shared their indigenous knowledges about plant and animal life, specifically how to use impala skulls and Letopo plants in the leather tanning process (see Figures 5.5, 5.6, and 5.7 above) with the university actors. The excerpts below, which came from interviews with community members illustrate the flow of this knowledge about the leather tanning process from the community to the university in greater detail:

The deputy chair of the KCT explained (day, month, year):
The Letopo plant is a Kalahari plant and they learned about the qualities/characteristics of this plant from their parents when they were young and taught about their environment and natural surroundings. They explained that the plant is found both inside and outside of the CKGR …inside the CKGR they have knowledge of the area as to where to find it…now it is a challenge because they have to go to Salajwe (Kweneng west), 40 km away…they hitch [a] lift from government, local government (e.g. Wildlife, Council) …. some of the Kaudwane residents have vehicles ... horse and donkey transportation is also available to those with no access to vehicles.

GG [one of the Community Trust members] explained:
They identify the Letopo plant by its leaves and that when the plant is young the leaves are still closed but when the plant is ready for harvesting, the leaves open and the plant becomes bigger. ... the size of the tuber is determined by the whole leafy area. … if it is big then it implies that the tuber is big and ready for harvest. It is a root. Once the plant is ready for harvesting, they open the top part to assess the size of the tuber…draw a circle around the plant in the soil and then they dig it out. It is a self-germinating plant in that the plant, prior to harvesting, is spreading its seeds for re-growth so when they harvest the plant it is already rejuvenating itself.

To prepare the plant for use in the tanning process, the root's outer skin is removed by peeling it like the skin of an onion. This is done by sharpening the wood just like the steel knife in the kitchen is used to scrapping carrot. Once the scrapping is finished, part of the root is grated like a beet root

PB [another member of the Community Trust] then explained:
The skin [of the Letopo plant] sits on the grass …during the tanning process. The grass is woven and the skin sits in the grass and then the grated liquid from the root plant is spread on the entire skin, while squeezing out the juice of the root into the skin and the remains of the grazed stuff is spread with a hand onto the surface of the skin is wrapped and leave the skin to soften. They are all quite adamant that the plant is so effective in tanning the skin that it takes only 10 to 15 minutes approximately once the liquid is squeezed into the skin. Then once the skin is wet, the skull of an impala (although PB quickly changes the word impala to goat); is used to remove the small meat remaining on the skin… (during the interviews the interviewer noted that an impala skull in his house and as well as his compound) is used, specifically two parts of the impala – they hold the flat part of its skull and use its teeth to clean the skin. Then, once this is done, the softened skin of the animal is ready to tanning and dying process.

In addition to sharing this knowledge, the community members, particularly the elders, also had the opportunity to share about their traumatic community history of being relocated. This allowed them to give voice to their experience of social exclusion; their experience of having to

develop a new livelihood; and of experiencing poverty and unemployment. While the UB San researchers benefited from coming to understand more about the everyday lives of a marginalised population, this outcome or knowledge/skills transfer was less concrete/tangible than the knowledge/skills transferred to the Kuang Hoo Community Trust members.

The UB San researchers worked as intermediaries and facilitators—organising and participating in strategy sessions involving the Community Trust and other external organisations, including the San community in Namibia. They also contributed their financial and intellectual support to the effort, and to working behind the scenes to advocate for licenses and for leather goods that were taken for the agriculture show in Botswana to be returned to the owner.

Community participation
In this interaction, members of the Kuang Hoo Community Trust played an active role by assuming leadership positions, making strategic choices, and partnering with external organisations. They were the pioneers in bringing about change for and on behalf of their community. The community's Kgosi played a very active role in this interaction as he requested support from the Department of Wildlife and National Parks in establishing contact with UB's San Research Centre. The project also involved community members, who served on the Community Trust committee and participated in the strategy sessions. Community elders were also available to share their accounts of being relocated from the game reserve to Kaudwane village.

Outcomes and benefits
The table below highlights the outputs (e.g., achievable and tangible products) and outcomes (e.g., changes in behaviours, attitudes, practices, capacities, policies, relationships, technologies, etc.) that were brought about in and through the interaction between Kaudwane community actors and the UB San Research Centre actors.

	Benefits	
	Community actors	**University actors**
Outputs	New production processes for the leather making processing plant (using Letopo plants to support the leather making process)	Academic publications
	Access to formal markets	
	Participation in benchmarking exercise by visiting a San community in Namibia that faced similar livelihoods challenges and overcame them by successfully developing enterprises through the establishment of a Community Trust	
Outcomes	Community members improved their capacity to engage with external organisations and to form inter-organisational partnerships	Researchers developed an understanding of local, context-specific issues impacting the San people in Kaudwane and possible ways to respond in order to address these challenges
	Community members improved their capacity to work as a members of an organisation to support the livelihood	Researchers learned about local and traditional knowledge sources (e.g., they learned about how the San people use the

needs of community	Letopo plant and impala skulls to tan leather for their leather processing enterprise; they also learned about community elders' traumatic experiences being relocated from the CKGR to Kaudwane)
Community members transitioned from being individual artisans to being members of a collective, community-based enterprise	Researchers strengthened capacity to engage in community based, inclusive research *with* San people
Community members developed concrete, strategic plans for the mobilisation of the Kuang Hoo Community Trust's four projects	University of Botswana, particularly the UB San Research Centre, strengthened reputation for community engagement

The main output and outcome of the interaction is that members of the Kuang Hoo Community Trust have become active leaders in identifying and responding to community needs and bringing about organisational changes within the community. Working as a collective, they have also improved their ability to liaise with external organisations, to develop strategic community-based plans and to enact organisational change. The interaction has enabled community participants to take on leadership positions in their community, and to develop existing projects. It has also given them the opportunity to liaise with other external, community partners (in a less hierarchal, top-down fashion). For example, instead of working with a particular Ministry that is responsible for implementing particular changes in the area, the Community Trust worked with another San community—working with and learning from them.

Although a few outputs and outcomes emerged from this interaction for both the Kuang Hoo Community Trust and the UB San Research Centre academics, there were also four strong tensions impacting the interaction's abilities to move forward and address the Community Trust's challenges:

- The vision of the Community Trust often seemed at odds with the needs articulated by community members and by the local contextual realities of the community. This was evident, for example, when community members were busy participating in and committing themselves to other business ventures or community development projects and not to the Community Trust.

- The need for lead researcher of the San Centre to engage in numerous small-scale interventions on behalf of this community's members took time and energy away from her being able to put effort into a larger, more systematic intervention to address this Community's challenges. For example, much of the UB researcher's time and energy went into supporting one community member in getting his leather goods returned to him as opposed to working for partnerships that would promote more sustainable or secure market partnerships in the future.

- The aim of the Community Trust to develop a leather processing business and curio shop to sell leather goods, which was intended to sustain the economic livelihood of people was at odds with recently introduced government laws prohibiting the hunting of game animals and the gathering/harvesting of plants from the game reserve.

- The potential backlash from the Government of Botswana in working on San related issues prevented other members of the University of Botswana community from

collaborating with the San Research Centre in addressing this community's uncovered challenges.

While the interaction between the Kuang Hoo Community Trust and the UB San Research Centre academics was "people-centred" in the sense that it potentially assisted a few community members to become empowered by becoming leaders to bring about social change and take an active role in community development, the interaction struggled to find concrete solutions to address the enterprises' challenges. Because of this, the interaction also struggled to introduce long-term, sustainable solutions to overcome the community's livelihood issues as there is little to no evidence that the interaction improved the livelihoods of community members.

The academic outcomes relate primarily to the UB San Research Centre's ability to work with San people as opposed to for or on behalf of them. Further, this case saw the UB San Research Centre benefiting from the on-the-ground interactions with San people in two ways. First, these interactions helped the UB researchers learn about innovative ways the community members were already engaging in leather tanning processes, using local and traditional ways of knowing. Second, it also illustrated how developing a more nuanced understanding of the ways in which day-to-day challenges can influence, and at times, impede long-term, community-based projects.

In terms of replicating this project, there could be ways for universities to work with marginalised communities, particularly communities that experience such extreme marginalization as the San people in Botswana. This could be done by facilitating benchmarking and strategic planning processes that position community members as key actors and key decision makers in the process and then getting members of the Community Trust to work with members of other communities, perhaps ones not as marginalized or individuals who have overcome their marginalization on a regular basis to identify needs of the organisation, develop concrete action plans, and identify possible partners, and implement the action plans. In addition, rather than the Trust's members seeing themselves as competing with other enterprises in their community, perhaps they could leverage their knowledges/skills to collaborate with the already existing enterprises in their community.

Enablers and constraints
The following are a list of conditions that *enabled* the interaction between the University of Botswana's San Research Centre and the Kuang Hoo Community Trust:

- UB San Research Centre's mandate, which is to engage in social justice and social innovative initiatives and build long-term relationships with marginalised San communities;
- The Government of Botswana's Community Based Natural Resource Management policy, which funded the San community in Kaudwane to implement their Kuang Hoo Community Trust enterprises in order to address rural poverty issues and promote income generating activities;
- Kaudwane Kgosi's capacity and trust in both government and university structures to contract the Department of Wildlife and the UB San Research Centre for assistance;
- UB San Research Centre's reputation in the Kaudwane and larger Botswana San community for supporting San-related issues in Botswana;
- Department of Wildlife and National Parks officer's agreement to send a letter to the UB San Centre on behalf of the Kuang Hoo Community Trust in order initiate the interaction between the UB San Research Centre and Trust;

- Tsumkwe San community in Namibia willingness to participate in the benchmarking exercise and offer support to Kaudwane San community;
- UB's Office for Research and Development's funding and the Government of Botswana funding to support Community Trust members, UB San researchers, and Department of Wildlife and National Parks officers to Namibia to visit the Tsumkwe San community;
- District government donation of a building to house the Trust's leather processing project;
- San people of Kaudwane's commitment to address their livelihood challenges by developing sustainable, community-based enterprises.

The following are a list of the condition that *constrained* interactions between the UB San Research Centre and the Kuang Hoo Community Trust:

- Disjuncture between the Community Trust's vision to develop a leather processing enterprise and a curio shop to sell these leather goods (in order to address their community's livelihoods challenges) and recently implemented government laws prohibiting the hunting of game animals or gathering/harvesting of plants from the game reserve where the community would collect these skins for their leather goods and the plants needed to process the leather;
- Difficulties stemming from the Community Trust's remote and rural location in Botswana, such as communication issues because of limited mobile phone connections, limited resources to facilitate interactions in remote community, lack of services/infrastructure, and isolation from mainstream economy;
- Limited capacities of community's inhabitants to engage in different livelihood activities after being relocated to their new community;
- Limited interest/demand for the initiative from community members evident from the community members seeking employment in other community enterprises, such as a competitor's leather shop and the recently opened Ghaghoo Diamond Mine;
- Inability of government to effectively plan for and oversee full implementation and development of the four enterprises that made up the Community Trust - evident in the delays in land leases, licenses, and permits as well as the inappropriate use of resources (e.g., the District Council helped the community fence the curio shop but was not able to help the community attain a license to open the shop for business; the government donated a machine referred to as the "white elephant" to tan the leather products but the community did not receive appropriate training in how to use it);
- Extensive amount of time and energy required from the UB researcher to address the numerous small-scale contextual issues individual members of the San community faced (e.g., UB researchers spent a lot of time and energy supporting an artisan in retrieving his leather goods from a government official that were taken by this official to compete in a national agricultural show in Gaborone);
- Limited technical skills of the UB San Centre researchers to support the community members with their various technical processes, particularly with the innovation of the leather tanning processes;
- Unwillingness of UB academics in other disciplines to support San people because of the complicated and sensitive nature of the research. This prevented the UB San Research Centre from being able to expand and offer more support to the Community Trust;
- Struggles of the community members and researchers to connect individual problems to larger systemic or structural issues (evidenced by them blaming other people working in the informal sector).

Conclusion

The Kuang Hoo Community Trust case is an example of an interaction between the UB San Research Centre and the Kuang Hoo Community Trust members aimed at supporting/sustaining a four enterprises run through a Community Trust. These enterprises, and the larger Community Trust were implemented in this community through the Government of Botswana's Community Based Natural Resource Management policy to address livelihoods challenges emerging from the San people's relocation out of their traditional home of the Central Kalahari Game Reserve to the unfamiliar village community of Kaudwane, which is located in the remote Western part of Botswana. This interaction attempted to support the Community Trust with social innovation—giving Community Trust members an opportunity to partner with external organisations, to participate in strategic planning sessions, and to respond to the needs of their community. In this case study, members of the Community Trust were key actors in the process—taking on leadership roles, identifying and responding to problems in the community, and participating in decision making.

While this study was inclusive of community actors (Foster & Heeks, 2013), it has highlighted how—for innovation to be truly inclusive—it must be responsive to the systemic realities of the community (e.g., honouring their laws, considering the institutional processes for bylaws).

Further, this case study has also highlighted a disjuncture between on the ground realities of community members in an informal setting and the small scale interventions sought by them (e.g., retrieving leather goods from an exhibition) and the need for researchers to take a more active role in bringing about more-systemic change. The disjuncture between small scale interventions and the need for systemic change can inform future university research.

In terms of what type of scale the project can be brought up to, community members, who participated in the process, could use their knowledge to support others in the informal sector in identifying their needs, partnering with external organisations, and developing concrete action plans to address community livelihood problems.

Chapter 6. Kgetsi ya Tsie Community Trust: an interaction to support morula oil production

Introduction

This case study examines the Kgetsi ya Tsie community's collaboration with the University of Botswana. The interaction between university researchers and those in the informal sector aimed to support the capacities of community members in their natural resource-based project. More particularly, the collaboration aimed to improve the Morula oil manufacturing processes and quality control measures of community members. While these interactions primarily brought about process innovation—as they did in fact improve the oil manufacturing processes and quality control measures—they also led to market innovations as the project enabled community members to gain access to economic markets nationally and internationally. The university's involvement also allowed the trust to expand out and support another community enterprise (through the donation of natural resources). This case highlights how the community partner was able to identify and recognise other needs and ways in which the university could support them in and through the process. One constraining factor in this interaction was the remote, rural location of the Community Trust. This location made it difficult at times for the university actors to access the community as well as the community to access the other community enterprise it began to assist. In detailing one community's interaction with three different university departments, this case highlights the importance of interactions that honour and respond to the changing and unpredictable needs of organisations, and of interactions that involve interdisciplinary efforts.

Overview of the interaction

Located in the Tswapong hills area of rural Botswana, the Kgetsi ya Tsie Community Trust, makes their living from the Morula (*Sclerocarya birrea*) project, a natural resource based project. The project extracts oil, produces oil and sells oil on the market, and is a source of employment for over a thousand formerly unemployed rural women. Founded in 1997, the Trust originally focused on Phane (Imbrasia belina caterpillar) and over the years extended to morula fruit. The Tswapong region had a long history of preparing nuts with a bit of salt for a nutritious snack. As a community-based enterprise, the trust has a registered constitution and rules of operation to guide the management board responsible for running Kgetsi ya Tsie. The Trust currently has a membership of 1632 women from 26 villages in the Tswapong region. It can be said to have grown sustainably — from six villages in 1997 to 26 villages at present. Further, the trust is a major source of income for the women and their families.

The project is formal in the sense that they are a registered trust, and they have a management board, a production unit with operators, as well as people working in packaging, marketing and networking. They also have a workshop with an oil press in Lerala. Despite its formal characteristics, the project is also informal in the sense that, prior to working with the university, they did not have the ability to measure the quality of their oil or ascertain whether or not the oil was bringing harm to their customers. Therefore, they lacked a scientific or technical understanding to ensure quality control and management of their product. The interaction between the university and the Community Trust was motivated both by the community's need to support their livelihood as well as their desire to ensure they were not bringing harm to their cliental.

The interaction began with the community being motivated to seek assistance from the university after a potential consumer raised concerns about the oil at a trade fair in Gaborone. At

the trade fair in the consumer, a high court judge, asked whether or not the women could ensure the oil they were selling was not causing harm to people. This question raised concerns for the community about the value and quality of their oil, and about a potential liability if the oil could cause harm or unknown side effects to consumers. This question posed a threat to the livelihood of the women. While the women had knowledge about how to produce the oil, they lacked an understanding of how to implement quality control measures.

Responding to this concern, the chairperson of the Kgetsi ya Tsie management board (representing the Community Trust) approached the Department of Chemistry at the University of Botswana to help them analyse both the quality and quantity of the oil. Specifically, one Professor in the department was the main point of contact [confirm this]. The Professor of Chemistry stated, "It was important for the women themselves to know what is being sold in order to satisfy their customers." After this initial instance of contact, the department undertook research on how to monitor and control oil quality, as well as how to develop simple methods for this process that could be used outside of the lab in a rural community by semi-illiterate women. Working with his students, the Chemistry Professor also identified a need to measure the products. To do this, he came up with a process to accurately and efficiently measure the product using balances to calibrate the containers. He then trained the community members in the process.

During the interaction with the UB Chemistry department, other problems were identified, including decreasing yields of oil from the old oil presses and malfunctioning presses. To address these maintenance problems (and to make the process more efficient), the Kgetsi ya Tsie women contacted the Department of Mechanical Engineering for support in improving the efficiency of the oil extraction/production process. The operators, who were involved in the assessment of the problem, identified the aging hydraulic presses as the cause. The researchers, operators and community members (who were managers) then decided to apply for additional funding from the United Nations Global Environmental Facility (GEF) for new presses. The operators were also involved in this process by identifying and choosing the replacement presses and testing their efficiency using their 'sun bathing' of the nuts after each cycle of oil pressing. After the completion of the repairs, further testing of oil quality was carried out before the presses were considered fully functional and restored efficiency. From there, the engineers developed ideas on how to produce morula pulp from the fruits for another group of women in Gabane (south of the country) who are using this pulp to make sweets for sale.

In addition to working with the Departments of Chemistry and Mechanical Engineering, the women also contacted the UB System Design department for support. The UB System Design department assisted the community in labelling their products to enhance marketing, in developing an understanding of national/international market needs, and in improving their product development/marketability.

The interaction between the university partners and the Kgetsi ya Tsie community is a long term relationship of mutual benefit. From the community's side, it has benefited from improvements to its quality control and measurement processes as well as its ability to maintain/repair their oil presses. The University has also benefited from doing research on oil sample and using oil presses. Further, this project has initiated new research on other oil seeds and systems. Following this example, recent research has also worked to honour indigenous knowledge while supporting communities in finding ways to reducing the labour intensiveness of the process. It is also worth noting, the partnership was more time-intensive in the early stages when the community was motivated to find an urgent solution to the problem of ensuring quality. However, after the
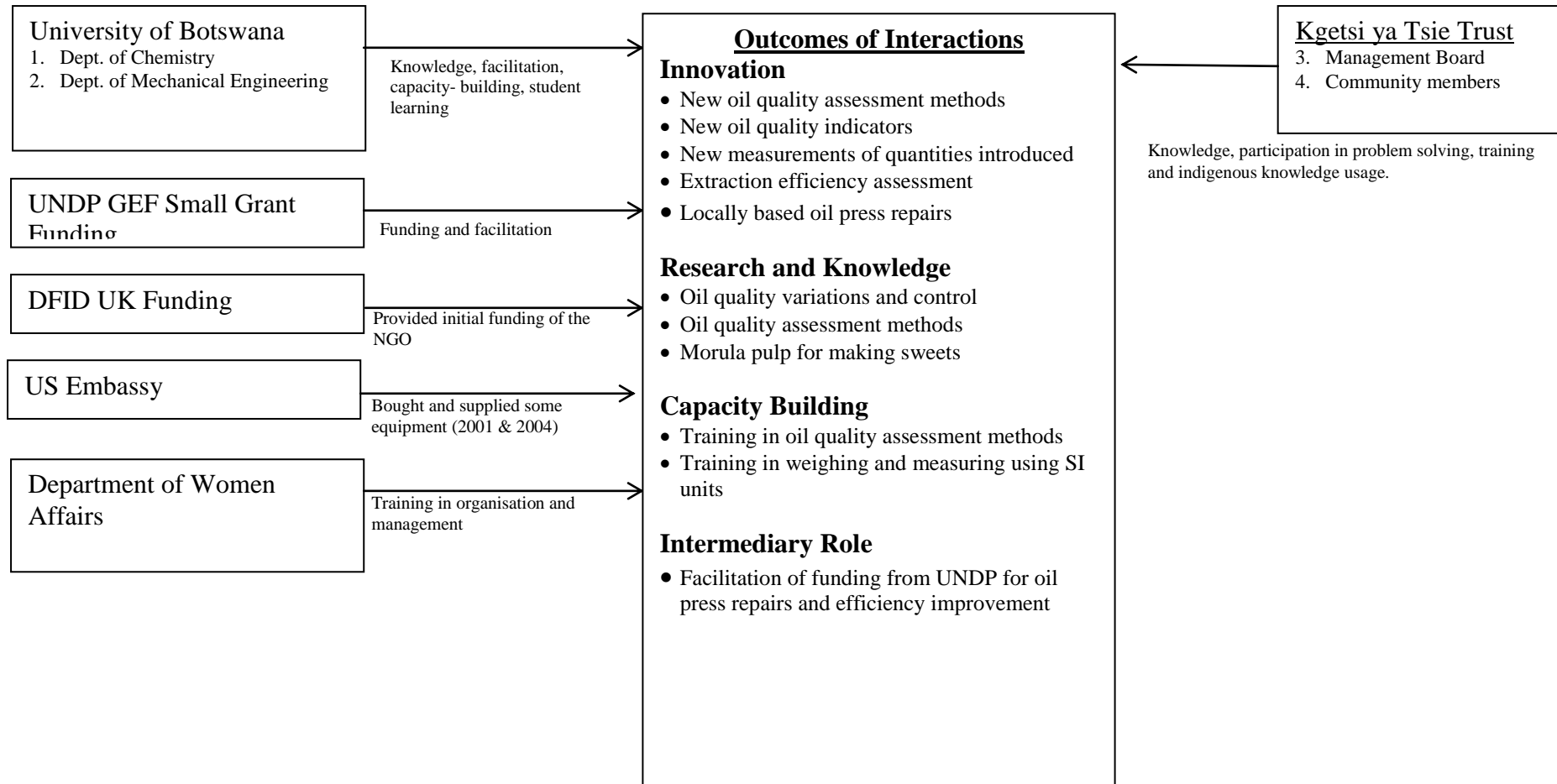
partnership progressed, visits with the university became less frequent and the Trust was able to sustain their progress independently with less frequent contact with the university.

This case highlights an interaction between a community partner that initially had very specific, concrete and actionable requests for the university to address. While the Trust benefited from the specific support they requested, in and through the process they also came to identify and recognise other needs and ways the university could support them. This case highlights the importance of flexible organisational partnerships and for funding opportunities that allow for emergent processes and account for the changing, unpredictable needs of organisations.

Structure of the interaction
The interaction between the University researchers and Kgetsi ya Tsie mainly involved members of the Community Trust's management, production, and marketing units. The chair of the KyT management board initially contacted the UB Chemistry researchers and made arrangements for the research and subsequent training of women, who could work in quality control. The community members in the management unit also made arrangements for the visits of the researchers and students to Kgetsi ya Tsie in Lerala. During these visits, the researchers assessed the quality of the oil and implemented testing processes that the women could perform. The partnership with the UB Chemistry department also led the community to identify other needs—including the need for improved production processes and improved market access. Recognising this, Kgetsi ya Tsie worked with two other university departments, including the Department of Mechanical Engineering and the Department of System Design. In, and through the interaction, they developed new processes, increased their market potential, and strengthened their organisational structures. See the Figure 1 below for a more detailed illustration of the structure and flow of this interaction.

University of Botswana 1. Dept. of Chemistry 2. Dept. of Mechanical Engineering	Knowledge, facilitation, capacity- building, student learning	**Outcomes of Interactions**

Outcomes of Interactions

Innovation
- New oil quality assessment methods
- New oil quality indicators
- New measurements of quantities introduced
- Extraction efficiency assessment
- Locally based oil press repairs

Research and Knowledge
- Oil quality variations and control
- Oil quality assessment methods
- Morula pulp for making sweets

Capacity Building
- Training in oil quality assessment methods
- Training in weighing and measuring using SI units

Intermediary Role
- Facilitation of funding from UNDP for oil press repairs and efficiency improvement

University of Botswana
1. Dept. of Chemistry
2. Dept. of Mechanical Engineering

Knowledge, facilitation, capacity- building, student learning

UNDP GEF Small Grant Funding

Funding and facilitation

DFID UK Funding

Provided initial funding of the NGO

US Embassy

Bought and supplied some equipment (2001 & 2004)

Department of Women Affairs

Training in organisation and management

Kgetsi ya Tsie Trust
3. Management Board
4. Community members

Knowledge, participation in problem solving, training and indigenous knowledge usage.

The following table highlights the work of the primary actors involved:

- **Kgetsi ya Tsie** – founded community-based organisation; expanded business over years; responded to the concerns of potential consumer (ensuring product was not harming consumers; initiated interaction with the University of Botswana; applied for funding from various organisations); contacted other departments at the University of Botswana; travelled to the University to improve quality control and manufacturing processes; hosted university researchers;

- **UB Department of Chemistry** – worked to develop processes to test quality and quantity of oil; developed processes in research laboratory; worked with community to develop ways of monitoring quality/quantity that could be achieved in rural community; identified and responded to needs of community

- **UB Department of Mechanical Engineering** – responded to community's need for improved oil manufacturing processes and to improve/repair malfunctioning oil processing machines; worked with community to identify problem and develop technical solution

- **UB Department of System Design** – responded to the community's need for improved marketing and product development; worked with the community to improve product marketing, to develop an understanding of the needs of national and international markets and to improve market access

The following table highlights the work of other, secondary actors involved:

- **African Development Foundation** – provided long term funding (1999-2004)

- **Community Forestry Development Programme** – provided funding

- **Department for International Development (DFID UK)** – provided funding, assisted with forming an organisational structure, registering the trust, setting up management structures, purchasing original oil presses, developing the product and exporting the product to market. They also provided technical support who set up the basic structure to get the women to work together, while the United States Embassy provided some equipment (2001 – 2003).

- **Skillshare International**– provided funding

- **University of Zimbabwe**—previously worked with researchers to produce 'Lip Bum' in an effort to diversify their product range

- **USAID** – served as innovation intermediary, linking core innovators (rural women) with consumers (to support sustainable harvesting and processing)

- **Women's Affairs Department in the Ministry of Home Affairs (Botswana)**— provided support to the Community Trust; provided training to the women of Kgetsi ya Tsie on running organisations and business management.

Organisational arrangement and interface structures

There are various institutional and national policies that have shaped the interaction between the Kgetsi ya Tsie and the University of Botswana.

The following are the university-level policies and support structures:

- The University of Botswana mandate requires the university community encourages social responsiveness and community engagement;

- The University of Botswana *Strategy for Excellence* (2008) stresses the importance of taking the university to the community;

- The University of Botswana Research Strategy (which is organised by the Office of Research and Development) provides financial support for UB researchers, who are working to solve social problems (University of Botswana, 2008b);

- Research Commercial function of the Office of Research and Development has also helped raise university staff members' awareness about issues of innovation and intellectual property that emerge when doing research to benefit the community;

The following are the national policies and support structures:

- The Government of Botswana's Poverty Eradication programme supports community-based programmes. Recent poverty eradication initiatives spearheaded by the Government of Botswana have included food programs (e.g., jam, pickles, food catering, food packaging, backyard garden, bakery, small stock, poultry and bee keeping) and non-food programs (e.g., kiosks, home-based laundry, leather works, textile, tent hire, landscaping, hair salon, backyard tree nursery, handicrafts, basketry, pottery, wood carving) (Botswana Government, 2012).

The following are other international policies and support structures:

- Donor agencies—including the Community Forestry Development Programme, Skillshare International, Department for International Development, African Development Foundation, and a government agent the Women's Affairs Department—provided support to the Community Trust (Motshubi, 2005)

- The Department of International Development assisted with forming an organisational structure, registering the trust, setting up management structures, purchasing original oil presses, developing the product, and exporting the product to market;

University of Botswana researchers are expected to interact with various stakeholders to generate and mobilise knowledge. They are encouraged to engage with others without obtaining prior permission from the university or making formal arrangements. That said, with the university's absence of requiring formal arrangements, many interactions are not officially documented by the university (or in any official records), which makes it hard to account for what is happening and hard to plan for future partnerships.

Drivers of interaction

The partnership between the Kgetsi ya Tsie community members and the University of Botswana was driven by the community's need for scientific and technical support to protect their livelihood. The initial interaction with the Chemistry department was motivated by the community's need to implement quality control measures/processes to ensure the quality of the oil. As one Chemistry Professor said, the women wanted to "know what sort of oil they have in their product". From there, the community also sought assistance from the Department of

Mechanical Engineering to repair/improve malfunctioning oil presses, and from the Department of System Design to improve product development and market access. In approaching the university, the community made the assumption that the university departments would have the scientific and technical knowledges/capacities needed to support them with their needs. Further, the community also assumed the university would have the willingness to engage in a community-based initiative. While the community was the main driver of the interaction, the University was also motivated to engage in community outreach (as it was in line with the University's Strategy for Excellence [2008] and Research Strategy). This opportunity allowed for community engagement between the researchers and the community and between university students and the community. Further, over time, university researchers also learned from community members about plant life which supported their research.

Innovation

The innovation is first and foremost a process innovation as the primary and initial goal of the interaction was to improve the processes involved in measuring both the quantity and quality of the oil. The UB academics were themselves actors and innovators, "adapting and 'domesticating' innovations both technically and socially, so they were appropriate for poor communities" (Williams, Stewart, & Slack, 2005). Market innovations have also emerged in and through the interactions between the Kgetsi ya Tsie community and the University of Botswana researchers.

Process innovation is evident in the following:
- UB Chemistry researchers developed quality indicators/methods to measure the acidity level and test for harmful components in the oil (to improve quality control testing processes and ensure products were not bringing harm to others);
- UB Chemistry researchers simplified the testing processes to allow non-formally educated, semi-illiterate women to be able to carry out their own quality control measures outside of the university and in their rural community of Lerala;
- UB Chemistry researchers trained community members in how to monitor processing and how to conduct quality assessments of the oil;
- UB Department of Mechanical Engineering repaired oil presses and modified the oil manufacturing processes thereby adapting/improving existing technologies and improving efficiency of the oil production process;
- UB Department of Mechanical Engineering introduced new oil manufacturing machines to support work both in universities and in communities;
- Community members improved the oil extraction processes—using the sun to heat the nuts after pressing, which provided an inexpensive way to increase oil extraction while also honouring indigenous/local knowledges;

Market innovation is evident in the following:
- UB Department of System Design worked with community members to increase the community's understanding of their larger market, improve product development/marketability, develop marketing skills, and improve the women's ability to access the national and international markets;
- Community grew networks and increased market access as evidenced by orders of oil from American clients (for 500 litres of oil monthly), as well as from Italian clients (for 200 kg monthly), which exceeds capacity of women using hand operated presses (Kgetsi ya Tsie, personal communication);

- KyT expanded their network/reach, supporting the development of another community enterprise by donating their unused morula skin/pulp to a group of rural women in Moshupa who use the pulp to make sweets for sale

Knowledge and skills

Kgetsi ya Tsie's need for technical and scientific knowledge/skills was a central driver of their interaction with three different UB departments. They had specific, concrete and actionable requests that they approached the university to address. While they benefited from the specific support they requested, they also came to identify other needs and other ways of partnering with the university. In and through their partnership with three different departments, they developed a more nuanced understanding of their own organisation and of how to refine their organisational processes in order to better respond to national and international markets. One UB academic shared:

> It was interesting to teach people of that level… transferring of technology and scientific knowledge…there was some adaptation…the UB academic environment (the Chemistry lab with its equipment) was new to these women…they were learning new technology…innovation…extracting and analysing oil…there was transfer of skills, they did not have before interacting with the university [the Professor and his students]…students were also actors in the interaction, involved in the lessons on acid value...practical learning. The Kgetsi ya Tsie women became confident when assured that they could now have someone they could fall on…encouraging them to move ahead with their project.

Knowledge was exchanged in the UB laboratories and in the rural settings between the researchers and the KyT community members. The knowledge and skills flows were primarily unidirectional, flowing from the university researchers to the women to directly improve the women's knowledge base and skill set in the Kgetsi ya Tsie community. This new knowledge and skills allowed the community members to enhance their scientific knowledge and improve their capacity to engage in quality control processes. That said, university researchers also benefited from learning about the everyday realities of a community enterprise. They refined their ability to mobilise their research/knowledge to a rural community. Further, by installing an oil press in their university, they also improved their ability to generate new knowledge and to engage in research.

Community participation

The Kgetsi ya Tsie community members were active participants in the interactions—initiating engagements with three different university departments at the University of Botswana. They played an active role in diagnosing problems and identifying the needs of their Community Trust and seeking out the appropriate technical supports. While part of the process involved the university researchers working independently to come up with innovations, the community was also active in the process—particularly in finding ways to mobilise the knowledge and implement the innovations in the community. For example, the community worked with the university to develop a context-specific way of monitoring oil quality in their rural community. They were also involved in repairing oil presses and modifying the processes for improved efficiency.

Outcomes and benefits

The following table highlights the outputs (e.g., achievable and tangible products) and outcomes (e.g., changes in behaviours, attitudes, practices, capacities, policies, relationships and technologies) that were brought about through the interaction between Kgetsi ya Tsie community actors and the University of Botswana actors.

	Benefits	
	Kgetsi ya Tsie Trust actors	**University of Botswana actors**
Outputs	Quality oil	Academic publications, including, four journal articles, one book chapter and ten conference papers (with other papers in progress)
	Income from oil sales	Oil samples for research
	High oil yields	New machines for oil production to support future research
	Sustainable and efficient quality oil production processes	
	New machines for oil production	
Outcomes	Ability to measure quality and quantity of oil accurately and efficiently (using particular quality control methods and calibrated measuring cups)	Opportunity to collaborate with different disciplines at the University of Botswana
	Local solutions for oil press maintenance	Increased understanding of indigenous/local knowledges and community-based practices
	Improved ability to articulate community needs, to seek assistance from external organisations, and to develop long-term, strategic business partnerships with external organisations/actors	Supported university mandate of community engagement by involving researchers and students alike in community-based initiatives
	Increased understanding of national/international market, of product development and marketability, and of how to access to modern markets	Developed mutually beneficial partnership with a community enterprise, improving capacity to liaise with other community enterprises in the future while honouring indigenous knowledges and implementing technical/scientific innovations
	Developed capacity to support other community enterprises—donating morula pulp/skins to another group of rural women	

The main output/outcome of the interaction is that the Kgetsi ya Tsie Community Trust was able to improve their oil manufacturing processes, and, in turn, improve their economic livelihoods as well as potentially improve their livelihood by beginning to gain wider access to national and international markets to sell their product. They not only developed new processes, but also developed market and organisational forms. Further, promoting inclusive innovation, they used their own organisational skills to support another community organisation, donating the morula pulp/skins to a group of rural women.

The impact of the interaction to the community with the university has been positive. It has improved the oil production processes, improved the economic opportunities of the community and supported the   livelihood of over 1,000 community members and their families. The partnership with the university has helped to make the community enterprise more sustainable and more responsive to national/international markets.

The university partner also benefited from the interaction. University researchers were able to use the oil presses to extract oil samples for their own research. They were also able to train students in how to respond to the needs of communities and develop technological, context-specific solutions.

The interaction is also replicable and scalable in the sense that the same processes could be used to support community enterprises that are working with other oils. While the interaction was time/labour intensive for university researchers in the earlier stages, over time, the engagements became more sustainable in that the community was able to work with the improved processes without the direct support and interventions of the university. The project was also scalable in the sense that it was able to expand outwards and to directly benefit another group of rural women.

Enablers and constraints

The following are *enabling* conditions that facilitated the interaction between the University of Botswana researchers and the Kgetsi ya Tsie community:

- University of Botswana's mandate to engage in community based research and community based initiatives;
- Community's ability to seek assistance and funding from external sources (evident in their initiating contact with the university and with other organisations)
- Funding from donors to support technological interventions from the University of Botswana;
- Funding and infrastructural support
- KyT was already well-established and self-supporting prior to contacting the university

The following are *constraining* conditions that impeded interaction between the University of Botswana researchers and the Kgetsi ya Tsie community:

- Kgetsi ya Tsie's remote, rural location constrains the interaction with the University researchers who can only afford infrequent visits to the community (as it takes time, energy, resources to travel to the community)
- Kgetsi ya Tsie's remote, rural location delays solving the problems with the oil production processes
- Oil production processes are labour intensive as they involve cracking the Morula nuts by hand between stones to obtain the seeds and manually operating the oil presses. Both processes are strenuous and human-dependent. This, in turn, impacts production as the community cannot respond to the demands of the market

Conclusion

The collaboration between the University of Botswana and the Kgetsi ya Tsie supported the livelihood of the community while also bringing about inclusive and sustainable development. The project, again, was initiated when community members contacted the University for support with the oil manufacturing processes. Motivated by a concern for their own livelihood and for the livelihood of others, the community members worked with and learned from the researchers. Through the interaction, they were able to apply the knowledge and processes learned in the labs to their own communities. This project not only supported the livelihood of the community members involved; it also involved drawing from the natural resources of the area (as it was

context-specific and responsive the local environment) and supporting other community based social enterprises (e.g., in Moshupa).

This project could be replicated in other communities that rely on other oil seeds/systems as a source of livelihood. In particular, the ways that this interaction honoured indigenous knowledge while supporting the community in finding ways to reduce the labour intensiveness of the process could be replicated. Following the lead of the UB researchers in this study, future university partners could also work as intermediaries, fostering strategic partnerships between communities (as was the case in how the university initiated donating the morula skins to Moshupa (that the KyT community throws away) to make sweets.

While this project directly benefited the community of KyT with the process and market innovations, it also benefited the university as they were able to use the oil for their own research samples. Further, this interaction improved the university's capacity to engage with the community, to collaborate between disciplines, and to mobilise knowledge outside of traditional research settings.

Most notably, this case study has highlighted the need for university-community partnerships that are emergent in nature. While the community approached the university to address a specific goal, in and through the interaction with the university, they came to identify other needs and to engage with the university in other ways. With that, this case study has highlighted the need for interdisciplinary partnerships that are responsive to the emerging/changing needs of communities. It has also highlighted some challenges when it comes to anticipating the amount of labour/time/energy involved (as often times a community's needs are uncovered over time).

Chapter 7. Moshupa Youth Empowerment Project: an interaction to support educational and vocational training

Introduction

This case study examines University of Botswana researchers' interaction with Moshupa youth. Through this interaction, university academics provided alternative educational and vocational programming for youth, who were experiencing various livelihood challenges, including high school dropout rates and high rates of unemployment. The interactions brought about an organisational innovation—addressing a community need to re-integrate youth into the school system—and a market innovation—providing vocational training and engaging community members in the larger market. In a country where there are few institutional supports/structures linking formal education, public/private funding and entrepreneurship, this case is an example of an informal organisation circumventing institutional frameworks and providing a local, community-based response to support disadvantaged community members, and, in turn, link formal education with entrepreneurship. That said, while the programme was successful in responding to a community-based need, it struggled with bringing about systemic changes or long-term institutional supports to improve educational structures in this region in particular and Botswana more generally.

Overview of the interaction

This case study focuses on an interaction between a University of Botswana academic staff, who identified and responded to a problem in the village of Moshupa. Moshupa is a large village in the Southern District (Ngwaketse) of the country with a population of 20,016 people (Botswana Government, 2011). It is located approximately 60 kilometers from the country's capital city, Gaborone. The village is divided into wards (*dikgotla* or *dikgotlana*) that are politically under the jurisdiction of ward headmen, who hold traditional or tribal authority. Ward headmen report to the village chief. The people of Moshupa are called the Bakgatla-ba-ga Mmanaana. The village has a senior secondary school and three junior secondary schools, among which is the Diratsame Junior Secondary School - host of this case study. The village is also home to Moshupa Brigade, a vocational training center, and a few other daycare/kindergarten centers.

In the University of Botswana academic staff conducted research to assess the needs of the community, identifying three interconnected community problems: a) high levels of school dropout rates; b) high levels of unemployment; and c) high levels of youth being involved in criminal activity. The UB researchers then conducted interviews, questionnaires and observations with the youth and parents to understand how to best respond to these three community challenges. After getting a sense of the needs of the community, the researchers invited youth, who were school dropouts, to a meeting at which they facilitated registration of the drop outs with the Botswana Examination Council (BEC) and invited youth to participate in upcoming evening school tutorials. This arrangement was put into place because the institutions and the institutional structures currently in place did not have the capacity to accommodate marginalised youth or reintegrate school drop outs into the system. The UB researchers, in turn, circumvented the existing institutional structures, and provided comprehensive and much-needed support to the village youth.

Specifically, the researcher(s) introduced two different programs; one *educational* (to support students in improving their school certificate grades) and one *vocational* (to support participants in pursuing careers as entrepreneurs). To engage the youth and respond to a community-based need, the UB researchers organised evening tutorials at Moshupa Senior Secondary School and Diratsame Junior Secondary School. Modelled after Capital Continuation Classes in Gaborone.

These tutorial sessions ran from 5 to 7 pm in the evenings and gave participants the opportunity to study for and upgrade their high school examinations results. As a part of the process, participants learned from one another, from local teachers, who volunteered their time, and from tutors, who were fellow community members from Moshupa Senior Secondary School. The lead teachers, who were UB researchers, applied new methods of pedagogy and communication technologies. They also promoted both independent and group work as well as student-centred and portfolio-based learning.

Educational training. The aim of the educational training was to support participants in improving their school certificate grades, in returning to school, in registering with the Botswana Exam Council, and in retaking the Botswana General Certificate of Secondary Education (BGCSE) examinations. The programme responded to a community need as some community members did not have the money to register with the Botswana Exam Council or to retake the BGCSE examinations. Further, most youth did not have the opportunity to register with the Botswana College of Distance and Open Learning , an entity that was created by an Act of Parliament (December, 1998) to improve access to learning opportunities on a nation-wide scale for the out of school young adults. It could be suggested that the educational training has been relatively successful in terms of encouraging youth in the community to register. For example, in 2011, the first year of the project, forty (40) students were enrolled; in the project's second year, 2012, the number of new enrolments rose to sixty (60) students; and by the end of the project's second year, 2012, approximately ninety (90) students had sat for the BGCSE examinations. As of 80 students have registered for the BGCSE examinations, and 73 have been admitted for diplomas and degrees in tertiary education institutions, such as the University of Botswana, Botswana's Institute of Health Sciences, as well as Colleges of Education and of Technology in the country.

Vocational training. The project also offered its participants vocational training, specifically livelihood skills or creative industries training. Facilitated by the UB researchers, the aim of the vocational training was to support participants in pursuing careers as entrepreneurs. To bring about the vocational training, the researcher connected with local stakeholders to create context-specific training opportunities that honoured local and traditional knowledges. This initiative was supported by the Member of Parliament for the area, who challenged the academics to exploit local knowledge and establish commercially viable enterprises for the disadvantaged youth. The vocational training was tailored to those who were less likely to advance academically. Honouring indigenous knowledges, the project focused on baking, sewing, painting, print-making, pottery-making and dressmaking as well as in horticulture, photography, electrical work, poultry and tourism. The vocational training programme could be deemed to be relatively successful as participants have: 1) received Trade Test C certificates, which will enable them to attend vocational school in the country; 2) specifically, as of September, 2013, 56 youth participants have been involved in the vocational training with a number of them subsequently receiving nationally recognised certificates from formal sector artisan training centres, including the Ramatea Vocational School and the government-owned MTTC (a low skills level public vocational institute that trains artisans); and 3) as of 46 participants are still undergoing vocational training.

Overall, the educational and vocational projects can be deemed to have been relatively successful as some participants have been reintegrated into the country's formal education system, including both university programs and vocational training programs; whereas others are now self-employed, making use of their skills and engaging in small scale entrepreneurial initiatives or temporary work opportunities (e.g., for police, prisons or government departments in the village). The programs have used innovative means such as different pedagogical methods and

introducing youth to local knowledges in order to set up businesses that allow them to access and participate in the village and surrounding area's local market. The village leadership has also expressed that the project has been a resounding success since it has promoted entrepreneurship and reduced the levels of crime in the village. The programme has also helped to link the education system with the private/public sector, and to integrate the community in the national innovation system. The community has also been motivated to offer related community-based supports. For example, recognising challenges that entrepreneurs face, the Village Development Committee is planning to introduce workshops to support/accommodate entrepreneurs with various challenges. The success of the programme has also encouraged the local Moshupa Senior School Head to consider implementing similar pedagogical approaches that were used in the education component of this project. To support the formal school teachers in this process, a team of UB researchers will run a workshop on strategies to address poor results in other schools in the south region (2014). The researchers have also helped to train other local educators in how to move from teacher-centered to learner-centered educational approaches.

The aforementioned efforts were brought about by the interaction of University of Botswana researchers, who secured funding from the Office of Research and Development at UB. The interaction was also supported by the formal school system as the country's Ministry of Education and Skills Development agreed to allow school buildings at one junior and senior school in the village to be used for the interaction's educational and vocational programming.

The project has been beneficial to community members and university researchers alike. Participants in the project benefited from the educational and vocational training and from the subsequent opportunities brought about by the knowledges/capacities developed through these two training programmes. Specifically, participants were able to re/take the BGCSE examination, which allowed them to be reintegrated back into the country's formal educational system (including in both universities and vocational schools), to secure incomes from employment and other allowances, and to open businesses. While the university researchers' benefits were less tangible, they also benefited from their involvement in the interaction by developing project management skills and learning more about the local needs of a particular community. Furthermore, they were able to learn from the indigenous/local knowledges of community members in order to implement appropriate, context-specific educational and vocational training for its youth.

This case study is an example of university researchers making a contribution to Botswana's national system of innovation. With no direct link in Botswana between formal education, public/private funding and entrepreneurship, this case clearly demonstrates how UB researchers were able to link and integrate the various parts of the national innovation system within a particular socio-economic environment. This interaction is also context-specific in that the changes are brought about informally and on-the-ground as opposed to being developed/implemented in the sense of a western paradigm.

Figure 7.1 Moshupa youth at the University of Botswana applying for tertiary education (Source: UB CAD, July 2014).

Structure of the interaction

The interaction began with a University of Botswana researcher identifying and responding to a community based need—that of a high formal school dropout rate; high levels of unemployment; and high levels of criminal activity among youth in the community. The researcher recognised that it was a systemic issue in that the youth were not being accommodated by the country's formal educational system. Offering a community-based support, the researcher organised a meeting for local youth in Moshupa. The researcher also developed educational programming—to reintegrate youth into the school system—and a vocational program—to honour indigenous ways of knowing and support youth who were unlikely to pursue further education to gain training in these indigenous ways of knowing. Both programmes relied on the support of local teachers (who volunteered), and local tutors (who were paid). This interaction between the UB researchers and the informal community of Moshupa youth was sustained over a period. It was also responsible for empowering youth to pursue post-secondary education, to participate in the market, and to start their own business ventures.

While the interaction was mainly been between the University of Botswana academics and the Moshupa community youth, the interaction also involved interconnections between various stakeholders, including the management teams at the University of Botswana, the local authority, the government, NGOs and developmental agencies. Figure 2 below illustrates the structure and flow of the interaction.

	Outcomes of Interactions

University of Botswana
5. Department of English
6. Office of Research & Development
	Innovation
	• New study group & learning methods
	  ○ Portfolio organization of learning materials
	• Indigenous Knowledge used for livelihood
	  ○ Pottery and art
	• District exhibitions for marketing
	• Diversity of crafts

Knowledge, facilitation, capacity- building, student learning.

Government Training Institutions

Training programmes: secondary education, vocational training, etc.

Government Funding Agency

Tuition for secondary education, vocational training, tertiary education, etc.

Botswana Examination Council

Provides distance learning registration, examinations and results

Botswana Qualification Authority (BQA)

Maintains qualification standards, registration and accreditation of all training institutions.

Research and Knowledge
• Information about youth livelihood challenges
• Problems associated with school dropouts
• Village community concerns of dropouts
• Potential & use of Government provided programmes and resources
• Potential of youth self-empowered

Capacity Building
• Life skills and self-empowerment
• Identification of livelihood opportunities
• Stimulation of intrinsic motivation for learning and success
• Vocational training for skills development

Intermediary Role
• Department of English & Office Research and Development facilitated developments in the community through research that informed appropriately designed training interventions for out of school youth

Figure 7.2. Moshupa Study Group Case Interactions

The following table describes the ways in which the primary actors were involved in the interaction:

- **Moshupa youth:** participated in educational and vocational programming; attended both educational and vocational sessions; started their own businesses; secured employment; secured incomes; successfully passed secondary school examinations; qualified for university and for vocational training schools; developed employable skills to support their livelihoods.

- **University of Botswana researchers:** identified community's needs; organised community meeting; organised educational programming to reintegrate participants into education system; organised vocational programming to promote entrepreneurship; engaged/hired and trained community members to be teachers and tutors; offered learner-centered training; empowered/educated other local educators to provide alternative, learner-centered training; secured funding from the University of Botswana to fund initiative.

- **University of Botswana:** provided funding for both the educational and vocational training programmes through a grant from the University's Office of Research and Development (ORD)

The following table highlights other actors involved:

- **Botswana Qualifications Authority (formerly BOTA):** arranged six week-long training for youth certificates; gave certificates

- **External organisations** (Women Affairs, Ministry of Labour and Home Affairs): provided financial support for the projects of graduates

- **Madirelo Testing Centre (**a government institution): gave participants a certificate

- **Ministry of Education and Skills Development:** two specific entities within the Ministry of Education and Skills Development were involved in this interaction

  Department of Tertiary Education and Financing (DTEF): sponsored eighty individual students

  Kanye Regional Education Office: authorised secondary school heads in Moshupa to allow teachers to teach part time; granted permission for classrooms at Moshupa Senior Secondary School and Diratsame Junior Secondary School to be used during the evening.

- **Ramatea Vocational Training Centre:** Upon completion of the Moshupa programme, participants were accepted into the Ramatea Vocational Training Centre in Kanye, a vocational school that offers training in patchwork, dying and print-making

Organisational arrangement and interface structures

The programme benefitted from university-level policies and support structures. The University of Botswana *Strategy for Excellence* (2008) promotes community engagement, taking the University to the community. Further, the University of Botswana university mandate is for social responsiveness and community engagement, and the University of Botswana Learning and teaching policy places an emphasis on student learning (not teaching) that helped to shape the educational approach of the project.

In some ways, the programme also benefited from national policies and support structures, particularly as related to the educational sector. Botswana's Act of Parliament (Dec 1998), for example, aimed to improve access to learning opportunities on a nation-wide scale for out of school young adults. The act also created the Botswana College of Distance and Open Learning, which was a resource for youth participants. While there were some policies that enabled the interaction, overall the *lack* of policies and supports was an impetus for the interaction. It was the lack of national policies and supports that prevented youth from reintegrating into the system.

Drivers of interaction
The interaction between the UB researchers and the community of Moshupa was primarily driven by the UB researchers by three key drivers. First, the university researchers were intellectually motivated by their discipline to implement an alternative form of education, and socially to respond to the needs of a disadvantaged community. Second, the research grant they received from the University's Office for Research and Development supported the interaction as a component of this grant was used to pay tutors' salaries as well as cover the costs of the students' registration fees to retake the BGCSE examinations at the Botswana Extension College. Third, the University's mandate of community engagement also supported the initiative.

From the community member's side, specifically the unemployed and undereducated youth, although they did not specifically drive this innovation in terms of bringing about the organisational structure, they were actively involved as participants in the program. This can be seen in that over the course of participants completed the educational and vocational programming.

Innovation
In and through the interaction, both organisational and market innovation emerged.
Organisational innovation is evident in the following:
- An innovative educational training programme reintegrated youth into the formal education sector, addressing gaps in the Botswana educational sector
- Programme successfully linked formal education system to the private/public sector enterprises—evident in the ways that participants started their own community enterprises
- Vocational training programme drew upon local/indigenous knowledges to offer local, context-specific training (that made use of local resources and gave participants the needed knowledges/skills to participate in the market)

Market innovation is evident in the following:
- Participants gained access to the local market, opening their own businesses and securing/sustaining an income
- Participants secured incomes to support themselves and their families
- Participants developed an understanding of how to contribute to the local market (while using local resources and indigenous knowledges)

Knowledge and skills
The community members who participated in the educational and vocational training were the primary beneficiaries of the interaction. Their participation in the training gave them the ability to reintegrate into the educational sector, to pursue education at universities and vocational

training centres, and to enter into the labour market. The programme facilitated capacity development, skills transfer, and market training. One participant, who passed her high school certificate examinations as a part of the programme (and has since enrolled as an undergraduate student at the University of Botswana) described, "We managed to move from senior secondary school level to tertiary level because the project was providing continuity for those who had dropped out of the formal school system". Another participant attributed the program's success to the diverse approach, noting that the project attracted young people coming as far as Kanye (some 20 kilometers away from Moshupa) to attend tutorials.

For the formal education component of this interaction, it could be suggested that the flow of skills and knowledge was relatively uni-directional as knowledge and skills were transferred from the university researchers to the Moshupa youth. Yet, the programme did not rely upon a traditional teacher-centred lecture format with teachers solely teaching the students. Instead, it relied upon a learner-centred teaching model which encouraged the students to collaborate in order to learn from one another as well as the programme's tutors, who were also community members.

In terms of the designing and implementing the vocational training programme, there were some aspects of bi-directional knowledge flows as to design the program, the researchers had to first learn from and understand the community and local and indigenous ways of knowing and doing in this community. Specifically, the researchers learned about indigenous craft-making, dying and print-making and then helped design vocational programmes so the youth participants could begin to develop their skills in these potential entrepreneurial activities.

In speaking of one youth participant, a UNIID researcher reflected:

> "While living with relatives in the city of Gaborone where he was not working, he heard that a youth development initiative had been started in his home village of Moshupa. He then decided to return home in order to benefit from the initiative. Because he had never attempted BGCSE, he chose to follow the small scale entrepreneur path rather than the supplementing BGCSE, because he felt he did not qualify for the latter. He learnt photo painting and cloth dyeing.
> When we visited him on 11th September, 2013, we found him in a stall that he had hired as his workshop by the side of the road. In it he showed us the photos he had painted and the cloths he had dyed. He explained to us that before he joined the initiative, he had lived hard and slept rough. Most of the time. But after acquiring these skills he had become financially independent and was receiving orders from a few institutions who needed their cloths and caps to be coloured in a certain manner. He also produced and sold vehicle plate numbers on request."

In the account above, the researcher describes a youth participant, who acquired the knowledge and skills needed to work as an artisan, to engage with the local market, and to work with a local institutions. In and through the vocational programme, the participant transitioned from being 'unemployed' to being an 'entrepreneur,' starting his own community-based enterprise. The UNIID researcher also shared the story of three young women, saying:

> three young women … had been unemployed for a long time, during which period they had depended on their relatives for sustenance. These young women learnt baking as soon as the researcher introduced the small scale entrepreneurship programme. We visited them on the premises they had hired to bake their bread on. The women explained that they had virtually no livelihood before this venture but through it they

were producing many loaves of bread and other bread products, mainly on demand from schools and the prisons. They were doing so well that they were unable to meet the demand from the consumers. Again this is a positive example of how this initiative has impacted the lives of the people of Moshupa.

The ethnographic account above describes three young women, who moved from having "no livelihood," to participating in the vocational, small scale entrepreneurship programme, to starting their own community enterprise. As we can see, they developed the knowledge and skills needed to engage with the local market and to respond to the needs of local organisations. Yet, it is important to note that there is also a need for more support now that some of these livelihoods initiatives have started to succeed in order to meet the consumer's demands.

Community participation
By and large, community members were mostly recipients of the programme as the university researchers took on the interaction's leadership positions—initiating and implementing the project, making decisions, and educating community members. That said, community members were heavily involved in participating in the interaction. For example, community leaders, namely the headmen of the different wards of the village, affirmed the need for the project and offered support as needed. Community members were also called on to attend Kgotla meetings, to give feedback and to respond to surveys/questionnaires. Teachers, students and community members alike were involved in evaluating the programme. The project has also engaged local teachers to serve as teachers in the programme, and local youth to participate in the project, and to serve as tutors in the project. The community has been active in recruiting students for, and sending students to, the programme.

While the project started with university researchers educating community members, over time the youth participants developed the capacity to positively influence others in the village and to become more economically independent. Some participants were able to make an income and provide for their families through their businesses. The project has also motivated some community leaders to offer similar community-based supports. For example, as mentioned above, the Village Development Committee is planning to introduce workshops to support entrepreneurs to address their various challenges. Further, the head of the local Moshupa Senior School is trying to implement similar learner-centered educational approaches in their formal teaching context.

Outcomes and benefits
The following table highlights the outputs (e.g., achievable and tangible products) and outcomes (e.g., changes in behaviours, attitudes, practices, capacities, policies, relationships, technologies) that were brought about in and through the interaction between Moshupa youth actors and the UB actors.

	Benefits	
	Moshupa youth actors	**University of Botswana actors**
Outputs	Participants received educational and vocational training	
	Participants registered with the Botswana Examination Council (BEC), and re/took the BGCSE	UB researchers implemented a community-based project, successfully training participants in both educational and vocational programmes

	Participants were reintegrated into the formal education system, enrolling at university (e.g., University of Botswana, the Botswana Institute of Health Sciences, and other colleges of Education and Technology	
	Participants were accepted into vocational training schools (e.g., Ramatea Vocational School and the government-owned MTTC)	
	Participants received certificates (e.g., from Madirelo Testing Centre)	
	Participants secured employment (e.g., with police and prisons, government departments in the village)	
	Participants secured income to support themselves and their families (e.g., salary from businesses or allowances for studies)	
	Participants started community enterprises (e.g., in baking and craft-making), gaining access to the local market	
Outcomes	Participants acquired skills/knowledges to develop their own social enterprises/businesses and to further their education	UB researchers developed project management skills
	Participants developed capacities in educational and vocational streams	UB researchers successfully implemented an alternative learning model focused on learner-centred education with discussion groups, teamwork and independent work (as opposed to teacher-centred lectures)
		UB researchers developed reputation for community engagement
		UB researchers strengthened capacity to respond to the needs of a disadvantaged community
		UB researchers developed an understanding of local, context-specific issues and of indigenous/traditional knowledges (evident by introducing a vocational training informed by local knowledge)

As we can see above, the main output/outcome of the interaction was the improved capacities of the Moshupa youth. They were able to develop knowledges and skills that have served them

to complete their formal secondary school training, pursue post-secondary training, and/or enter the labour market. Improving the lives of participants has, in turn, improved the livelihoods of other community members. For example, some participants have used their incomes/allowances to support their family members. Further, community members in the educational sector (teachers, administrators) have learned from and worked to implement the learner-centered teaching approaches to support other students in the community.

This project has also had various benefits for the university actors. For example, the university researchers have benefited from developing their project management skills and developing their ability to engage with local communities. That said, it is important to underscore that the majority of benefits, outcomes and outputs experienced by the university researchers were brought through their work as leaders—not from the ways that they learned from or collaborated with the community. It is hard to ascertain if the programme would have developed differently with more direction from community members. With that, future projects could explore how community members can also speak to and educate university researchers.

This project was inspired by a similar project in Gaborone, and is scalable and replicable. Other communities could benefit from implementing a programme that responds to local issues, honours local/indigenous knowledges, and offers skills training for disadvantaged community members. That said, for this to happen, there would need to be increased institutional structures, supports and funding.

Enablers and constraints

The following are *enabling* conditions that facilitated interaction between the University of Botswana researchers and the Moshupa community:

- University of Botswana's funding (from the Office of Research and Development at UB) enabled the programme to pay for tutors and pay for students' registration fees to retake the BGCSE examinations;
- Ministry of Education and Skills Development allowed for school buildings to be used during evenings to host educational and vocational training;
- University of Botswana's mandate for its researchers to engage in community based research projects;
- Community's willingness to participate in educational and vocational training and develop community-based enterprises;
- University of Botswana researcher's willingness to engage with the community, and to invest time, energy and expertise;
- Member of Parliament's endorsement of the project.

The following are *constraining* conditions that impeded interaction between the University of Botswana researchers and the Moshupa community:

- Lack of government structures, supports and funds to continue the project after initial university funding ran out (the programme was dependent on University funding and university staff to run)
- Lack of organisational structures and supports at the university to ensure that engagement is implemented systematically (as the programme is an independent initiative of one researcher)
- Limited capacities of community members (skills, resources, ability) to sustain/facilitate training independent of UB researchers

- Inability of the government to effectively plan for and implement an educational programme that meets the needs of community members (and that supports disadvantaged youth in reintegrating in the school system)
- Limited time, energy resources of university researchers to facilitate educational and vocational training
- Inability of UB researchers to advocate for or bring about structural/systemic changes in the Botswana educational sector

Conclusion

Overall, the interaction has been positive for the community of Moshupa as it has supported the livelihood needs of the youth. Through the community's interaction with the university researchers, a gap has been filled between the formal education sector and an informal, disadvantaged community by integrating the community's youth back into the education system or the private/public sector. While the interaction did offer a local, community-based way of supporting youth, it relied heavily on the expertise of a select group of university researchers as well as funding from the University of Botswana. To scale up the project or to replicate it in other communities, future work with government agencies, particularly with the Ministry of Education and Skills Development, would be required to implement institutional structures to support long-term programming.

Chapter 8. Discussion of Case Studies

The intent of this chapter is to synthesize findings across the three case studies for the theoretical concepts that were used to make sense of findings from these studies. By doing so, we hope to determine what can be learned from these interactions between universities and marginalized, informal communities around innovations to address livelihood issues in the context of Botswana.

Table 8.1 *Case studies' key findings*

	Kuang Hoo Community Trust	Kgetsi ya Tsie Community Trust	Moshupa Youth Empowerment Project
Aim	The aim of the interaction was to determine innovative ways to mobilise the Community Trust, and, in turn, support the San people, who had been relocated from their homes on the CKGR.	The aim of the interaction was to improve the morula oil manufacturing process, and, in turn, improve the livelihoods of disadvantaged women.	The aim of the interaction was to provide innovative vocational and educational training to youth in Moshupa while also improving the livelihoods of the youth.
Nature of Interaction	The interaction was "people-centred." It empowered community members to serve as change agents and to take on leadership and decision-making roles.	The interaction was process oriented, helping the women devise new methods to ensure their product met quality assurance standards.	The interaction was inherently organisational. The interaction linked formal education sector and an informal, disadvantaged community, integrating community youth into educational sector and into economy.
Community context	Founded in, the case focuses on interactions had been in existence for a while.	Founded in 1997, the Kgetsi ya Tsie Community Trust is a well-established organisation that makes their living from the morula project, a natural resource based project.	The project was initiated in, when an academic conducted research to better understand the needs of the community in order to respond to this community's needs to address their livelihoods issues. The research led to the development of the vocational and educational programme to help the youth address their livelihoods issues.
	When the interaction began, the Kuang Hoo Community Trust was experiencing difficulties in moving forward or bringing about their agenda. They had a vision, but the programme had	When the interaction began, KyT was a well-established, sustainable organisation that was successfully supporting the livelihoods of over a	This interaction focuses on an interaction that initiated with the academic. After conducting a needs analysis research study, the academic created the organisational structures

	met some roadblocks. They approached the University to help them overcome these roadblocks and move the innovative activities of their Trust forward in order to improve their liveihoods.	thousand Trust members. They sought assistance from the University to address a particular issue that could impact their livelihood. From seeking assistance, they uncovered other issues that other departments in the University could assist with.	to allow community youth in the informal sector to participate formally as students in the programme.
Actors involved	The interaction successfully connected the community with the Nyae Nyae Conservancy in Nambia but did not explicitly seem to engage any other external actors in similar types of formally organized relationships. It failed to connect with crucial government actors.	The interaction allowed the community actors to expand their network and move across the university to work with actors in different departments who could assist their Trust's needs in a variety of ways.	The project involved teachers and students from the local area as well as approval from the Ministry of Education to use the school for evening classes. That said, it relied heavily on the select group of academics and funding from UB (wouldn't have been possible if university funding cut)—it was relatively dependent on the university.
Organisational arrangements and interface structures	The interaction was constrained by government ministries/policies that contradicted one another, and limited the ability of the Trust to move forward. For example while the Ministry of Wildlife banned hunting, the funding they received was for a leather tanning project that relied on hunting animals to acquire the skins for leather processing.	This interaction was supported by strong inter-disciplinary working relationships at UB. It is striking that Community Trust members connected with and learned from three different departments. The interaction did not seem to rely on government policies or programmes.	The interaction was motivated to respond to limited institutional/ governmental policies. The interaction circumvented these policies and introduced an alternative structure. The limited government policies fueled the interaction, bringing the university and the youth communities together.
Driver of interaction	The interaction was driven by both the Kaudwane Kgosi's trust in the University, particularly the San Centre at UB	A question from the community about the safety of their product and the potential threat to the	University actors' desire to promote social change and illustrate to the government (specifically the one member of

	because of its previous support for the San Community, particularly San students studying at UB, as well as the San Centre's administration and their desire to offer a social response to the livelihood issues of the San community.	product supporting their livelihood drove the members of the Community Trust to seek assistance from the University.	parliament in the area) how the university could be brought to the community were both drivers of the interaction.
Innovation	The interaction was an example of social innovation as it positioned community members as leaders in the process. That said, it also brought about process innovation—using Letopa plants in the leather making process—and market innovation—learning more about the larger craft market.	The interaction was first and foremost a process innovation as the primary goal was to improve the quality control measures. Through the interaction, market innovations also emerged (as the community members expanded their networks).	The interaction primarily brought about an organisational innovation—bringing about a new way to link youth in the informal sector to formal educational and economic opportunities. The interaction also brought about a market innovation—as community members gained access to the local market—opening their own businesses.
Community participation	Community members served as leaders in the process- making decisions, participating in benchmarking sessions, and directing the interaction.	While much of the interaction involved UB academics working independently to come up with innovations, community members were active in initiating interaction with UB, and with participating in the process (e.g., coming up with context-specific ways to make the process innovations accessible to and able to be performed by illiterate women).	While there were a few community members who served as teachers and tutors, by and large, community members were recipients of educational/vocational programming, although the needs analysis done prior to the implementation of the programme helped them inform the programme's design and ensure the programme responded to their stated needs.
Knowledge and skills	While the community did teach the university actors about the Letopo plant, the university actors	Most of the interactions centred on university actors educating or	Most of the interaction centred on the university educating the youth, and coordinating the

	primarily acted as an intermediaries/ facilitators. As such, there is no concrete evidence that knowledge/skills flowed to/from the university or the community.	supporting the community actors.	programming. There were very few opportunities for community to educate university actors or to take on a leadership role, although the needs analysis did inform the researchers of the community members' initial needs.
Outcomes and benefits	Community participants took on the role of leaders, playing an active role in community development.	KyT was able to improve their oil manufacturing process, and, in turn, protect and potentially improve their economic livelihoods.	Community participants received educational and vocational training that allowed them to reintegrate into the formal education sector and to secure employment often using traditional knowledge and handicrafts.
Enablers and constraints	The Trust's enterprises were heavily constrained by government level challenges such as a disjuncture between the vision to develop leather business, and the government laws prohibiting hunting.	KyT faced few constraints as it was already well-established and self-supporting prior to contacting the university.	The programme eventually faced funding constraints after its funding from UB ended. It was also heavily dependent on the support of the lone UB academic running the programme.
Other observations[6]	**Economic outcomes.** In a community with limited employment opportunities, this interaction helped to strengthen the Community Trust. That said, there is little evidence that the project has been able to support the livelihoods of community members.	The interaction helped to expand an income-generating social enterprise. The interaction increased community members' ability to participate in the market.	The project successfully created entrepreneurs in a community with limited, formal employment opportunities.
	Context-specific interactions. While the project did honour indigenous ways	The project honoured indigenous knowledges, and indigenous ways of	The vocational training drew from indigenous/local practices to teach indigenous trades

[6] In, and through our analysis, as well as continuously reworking and rethinking of the data, we came to see the importance of (1) economic outcomes; (2) context-specific interventions; and (3) researcher role/approach in university-community interactions. While these three areas were not a part of our initial research questions, we included them in our analysis here.

of using tanning leather (using Impala skulls and the Letopo plant), the interaction was not very responsive to local, context-specific conditions (e.g., hunting ban, licensing problems) or to find a way to innovate)	manufacturing oil. The project also successfully used the local natural resources, e.g., the morula nut.	(e.g., learning the crafts that were unique to the area)
Researcher role. In this interaction, the researcher was almost always on-call, responding to individual problems and providing small-scale support—not working to bring about more structural or systemic changes. The researcher worked as a social worker, providing social care.	The interaction became more sustainable overtime. While the community actors initially had a very specific, concrete goal for the university to address, in and through the interaction, the community and the university uncovered new ways of innovating, which meant the primary point of contact could transition to a more-periphery role.	In this interaction, the university actor conducted a needs-based research study to identify the community's challenges, and then responded with action-based programming. This is significant as the researcher's response to the community's livelihoods challenge came from a strong understanding of the marginalized community's context. The researcher then devised a context specific response to address the identified challenges but relied on government existing structures to do so.

Our intention in studying three cases of university actors interacting with members of informal, marginalized communities to innovative in order to address the community members' livelihoods issues was not to evaluate cases of successful or less successful interactions. Yet, in trying to determine a way forward to analyse the findings to understanding learnings across the cases, it is interesting to question what made an interaction more or less successful than another not to evaluate it but rather to understand best practices for future university/informal community interactions.

In the context of Botswana's three cases, it could be argued that the interaction between the University and the Kgetsi ya Tsie Community Trust was perhaps the most successful in terms of developing a particular innovation, in this case a process innovation, in order to protect and possibly improve the women's livelihood. The University/Moshupa Youth Empowerment interaction could be seen as the next most successful and the Univesrity/Kuang Hoo case as perhaps the least successful.

To briefly summarize some of the learnings across these cases, it appeared that all three community groups approached various university actors once other resources had proved unhelpful, particularly, in the cases of the Kuang Hoo Community Trust and the Moshupa

Youth Empowerment Project, after the government structures in place to assist the community groups, had proved unhelpful. Interestingly, all three community groups must have a significant level of faith and trust in the university to approach it for assistance, particularly after not gaining this assistance from the government. It seems that length of existence of the community group may also impact the success of the interaction as the Kgetsi ya Tsie group had been functioning since 1997 whereas the other organization had been in existence for a much shorter time period. Perhaps its length of existence also explains how the women's organization seemed to understand the specific need it required the University actor to initially address (although other needs emerged as the interaction progressed). It could perhaps be argued that the San people's interaction with the university was most challenged because the community members did not have a strong understanding, at the beginning of the interaction, of the specific needs they needed assistance with. And contrary to the Moshupa case, in which a needs analysis of the community was undertaken and a programme of action designed and implemented to address these uncovered needs, the same actions did not transpire in the Kuang Hoo case. Instead of functioning like a researcher or a teacher as the university actors did in the cases of the Kgetsi ya Tsie and Moshupa Youth Empowerment cases, the university actors in the Kuang Hoo case tended to function like a social worker or advocate for the San people, which was perhaps not working to the strengths of someone in the context of a university setting.

The level of government involvement in the original communities could also be an important factor. For example, the innovation and actions of the women in the Kgetsi ya Tsie Community Trust did not seem to be heavily influenced by the government, e.g., there were not many government policies or at least not ones mentioned that led to the implementation of the programme. In contrast, the Kuang Hoo Community Trust was actually put in place by a government initiative, the Community Based Natural Resource Management policy; yet, at the time of the interaction, two of the Trust's enterprises, the leather processing project and the curio shop were now being thwarted by another government ministry's decision to ban hunting activities in the CKGR. The Trust seemed to be heavily dependent on the government's assistance but was stymied by the lack of forward movement from various government entities, as well as the lack of collaboration and cohesion between government ministries policies and programmes. Located somewhere between the two abovementioned interactions, the Moshupa case was worked within the formal education structures but also found innovative solutions to work around these structures when they proved limiting to the initiative.

Finally, it is worth noting that in analysing the findings from the case studies, often the interactions themselves and the modes of interacting that took place between the university and the community were often innovative in themselves and, at times, actually overshadowed the innovative nature of the innovations the communities were developing to address their livelihoods issues.

Chapter 9. Conclusion

The purpose of this three year investigation was to better understand how universities actors, based at public institution in Botswana were interacting with external social partners. Specifically, we sought to understand how academics, working at universities in Botswana interact to support innovations of informal community actors, who are traditionally marginalised and experience various livelihood challenges, often due to this marginalisation. Such an investigation can inform the larger question of the role universities can potentially have in fostering inclusive social and economic developments at local, national, and regional levels. We began this investigation by tracing the national context of innovation in Botswana, moved to tracing innovation in the national higher education context, and then tracing innovations in three particular interactions between university actors and community actors in three different informal contexts in Botswana. We focused our attention particularly on interactions that support marginalised people, an area that was underexplored in the current scholarship in innovation for inclusive development in particular, underexplored in innovation literature more generally, and underexplored in government and university efforts in the context of Botswana.

Our findings offer preliminary insights into the role universities in Botswana's play in the country's national innovation system. To conclude, this chapter will explicitly address the following research questions (as presented in the introduction):

1. How are university actors engaging with informal, marginalize communities to enable innovations that support inclusive development? What factors enable/constrain such interactions?

We will also respond explicitly to the questions:

1. What are the implications of these findings for government and university actors? How can our findings inform government and university-based policies and interventions?
2. How can our findings contribute to the current scholarship on innovation for inclusive development?

Government and university-based efforts

Chapter 3 examined Botswana's national innovation system. Our analysis of government efforts to support innovation illustrated that most efforts have focused on the formal sector with little attention being paid to those in informal communities in the country. While Botswana has had significant economic growth, our analysis highlighted a disparity between rural communities and urban centres and between those in the formal sector and those in the informal sector. Our analysis also highlighted the siloed nature of government departments (that was further illustrated in the case studies). Lastly, the chapter contextualised the gap that exists between the development policies that have been put in place to address the country's rural development and poverty eradication.

Chapter 4 examined mapped patterns of interaction in Botswana's higher education system. In analysing the higher education system, it was striking that there were organisational-level differences between universities. Different universities reported to different government ministries. While University of Botswana (UB) had a policy for engagement, a higher level document, our analysis showed that mid-level policies worked against it. For example, the Performance Management System did not reward community engagement. Similarly, the *Policy Relating to the Undertaking of Private Work by University Staff (*approved 2001) discouraged academics from reporting their engagements (as they would have to pay the university money). We also

noted that UB did not have a senate-level engagement structure, and consequently lacked the ability to formally monitor engagement across its different sections. It was also striking that UB actors interacted mainly with other universities, with government departments, with firms, and with NGOs. A key finding from this component of our investigation was that, academics at UB rarely interact with informal, marginalised groups in Botswana, and have little institutional incentive to do so.

University-Community Interactions

The interactions between University of Botswana researchers and the Kuang Hoo Community Trust aimed to support the livelihoods of San people, who had been relocated from their homes on the Central Kalahari Game Reserve (CKGR) game reserve (Chapter 5). The focus of this particular interaction was to support this ethnically marginalised group in Botswana to determine innovative ways to mobilise and reorganise their Community Trust. The interaction was also intended to address the livelihoods issues that had emerged from their marginalised status in Botswana and their relocation out of the CKGR. While the case was inclusive of community members (who engaged as key decision makers and leaders in the process), the interactions were mostly focused on small scale interventions (sought by individual community members)—not on systemic, sustainable innovations that could best respond to the local/environmental realities of the community. Recall also that the case highlighted a disjuncture between the aims of particular government ministries, which was evidenced in one ministry funding the leather tanning project and the other ministry banning hunting of the skins needed for the project.

The interactions between the University of Botswana academics and the Kgetsi ya Tsie Community Trust aimed to support community members in their natural resource-based project by helping them to improve Morula oil manufacturing processes and quality control measures (Chapter 6). While the community approached the university to respond to one particular need—that of improving quality control measures—in and through the interaction, the community and the university uncovered new possibilities for innovation.

Chapter 7 focuses on interactions between University of Botswana academics and the Moshupa Youth Empowerment Project. Initiated by University of Botswana academics, the interactions brought about innovative educational and vocational programming for the youth. That said, while the programme was successful in responding to a community-based need, the case study highlights how the programme struggled with bringing about systemic changes or long-term institutional supports to improve educational structures in Botswana. Further, the interaction provided very few to no opportunities for the community members to influence or educate university actors.

Implications of findings for community, university and government actors

The following are key implications of our research:

Our findings suggest that interactions between universities and communities often center on knowledge/skills flowing from the university to the community. While there were a few striking moments when community members shared their indigenous knowledge (for example, using the Letopo plant and Impala skulls in the leather-making process in the Kuang Hoo Community Trust case), most of the interactions centered on university actors educating, supporting, or advocating for community actors. For example, in the Moshupa Youth Empowerment Project, the academics worked as educators and coordinators, teaching students and organising the

programming. Guided by this finding, future investigations can examine some of the following issues: how can future university-community interactions better facilitate the sharing of ideas back and forth, enabling knowledges/skills to flow from community actors to universities? How might a more mutual partnership change the nature and direction of the interaction? How could universities learn from and draw from the community actors? How can university actors open themselves up to learning from and working with community actors? How might community actors influence inclusive development?

Our findings suggest that involving external organisations is crucial to support innovation for inclusive development. For example, in the Kgetsi ya Tsie case, the community went from working with the Chemistry department to also working with and learning from the Mechanical Engineering department and System Design department. The researchers also supported the community in applying for funding through the United Nations Global Environmental Facility. This allowed the primary group of university researchers to transition from being the primary point of contact to playing a more peripheral role in the interaction and let other partners enter to share their skills with the informal community members. Alternatively, in the Kuang Hoo Community Trust case, the researcher was almost always on-call, responding to individual problems in the community. While the researcher did successfully connect the community with the Nyae Nyae Conservancy in Namibia, the researcher devoted a tremendous amount of time, energy, and resources in the attempt to make small scale livelihood changes (e.g., trying to retrieve the leather goods of one community member) for specific members of the community as opposed to bringing about more systemic changes that were required for the Community Trust to move forward and the community at large. While the researcher's efforts did respond to the stated needs of community members, we question how university actors can use their positions to bring about more sustainable long term solutions to address the challenges these informal, often marginalised communities face. Further, we question how universities can provide training and better equip its academics to potentially establish boundaries, to offer support that draws from their own skill set, or to foster less-dependent relationships with communities? How can how can university actors support communities in bringing about systemic changes? What is it that university academics can offer to these informal communities (that is unique to their position as university academics)? And finally, what boundaries might be appropriate and necessary to establish when engaging in similar interactions in the future?

Our study underscores the importance of entrepreneurial efforts in a country with few employment options and high levels of graduate unemployment. The case studies here point out the limited labour market options and the need for initiating new social and community enterprises. In the Moshupa Youth Empowerment Project case, youth developed a skills set, were integrated into the labour market, and encouraged to start their own businesses. With that, we ask, how could organisations, including NGOs, village councils, and universities best support entrepreneurs? What are the needs of entrepreneurs? How can entrepreneurs contribute to inclusive development?

Our findings point to the need for government ministries to collaborate or to be more engaged locally. For example, in Kgetsi ya tsie Community Trust case, the government donated the "white elephant" machine, but did not provide on the ground training to the women about how to operate it. Further, in the Kuang Hoo Community Trust case, government policies/efforts actually clashed with one another as the community received Community Based Natural Resource Management funding to support the community's leather tanning project; yet, another the Department of Wildlife and National Parks actually banned hunting in the Central Kalahari Game Reserve where the community hunted to get its skins for the leather tanning project. This impacted the ability of the Community Trust to engage in its tanning project, and resulted in the

community members engaging in illegal behaviours. Therefore, questions arise about how government actors can be more engaged at a local level in Botswana and ensure their policies work in tandem, across government ministries at the community level. Another question that arises is: how can community and university actors work together to influence government efforts?

While our findings show that the government has tended to conceptualise innovations as occurring in the nation's innovation, science, and technology sectors, none of the three case studies connected community actors to work in the formal sector. None of the interactions tried to integrate community actors into the field or to further innovation/technology work in ways that lessens inequality. Szogs, Cummings and Chaminade (2009) note that low levels of interaction among firms, as well as among different types of organisations (e.g., firms, universities, technology service providers) are typical of innovation systems in developing countries. In turn, we ask, how could universities connect communities to other organisations, particularly those in the formal sector? How might technological change be organised to improve livelihood conditions of marginalised peoples?

Innovation for inclusive development

Our research contributes to the current scholarship on innovation for inclusive development. In Chapter 2, 'Innovation for Inclusive Development,' we highlighted key work in the field, situating our inquiry in contemporary scholarship. While the key concepts introduced in Chapter 2 proved useful in directing our focus, we have since come to see some of the conceptualisations as 'working definitions' as our own research expands and extends some of those understandings.

Our research extends current understandings of ***inclusive development.*** Recent scholarship has positioned innovation in the emerging field of inclusive development as "people-centred" (Rogers, 2003 as cited by Cozzens & Sutz, 2012, p. 30) rather than technology or market centred. While this understanding of innovation in the field of inclusive development informed our study, and helped us examine particular actors and interactions between actors, the case studies presented here extend this definition, highlighting the importance of responding to local and environmental conditions. For example, in the case of Kuang Hoo Community Trust study, the interaction was inclusive of people (positioning community members as key actors in the process), but was challenged to respond to context-specific environmental conditions. Quite crucially, this finding pushes us to extend current understandings of 'inclusive development' to include local, context-specific, and environmental realities. Moving forward, we wish to extend the definition of inclusive development to include "development that reduces poverty, *[responds to local and environmental conditions, and]* enables all groups to create opportunities, share the benefits of development and participate in decision-making" (UNDP, n.d.). We would like to extend people-centred understandings to account for and better respond to local and environmental conditions.

Similarly, while we relied on the innovations literature in this study to conceptualise innovation as social, market, organisational, process, and product innovations (recall Table 2 in Chapter 1), the case studies underscore the importance of ***environmental innovation.*** By environmental innovation, we do not mean innovations that exploit the environment or exploit natural resources, but that innovations that respond to the environmental context, that reduce environmental impact or that bring about environmental changes. For example, the use of the Letopo plant in the Kuang Hoo Community Trust is a way of honouring indigenous knowledges and making use of natural resources to support innovation. Alternatively, the community and university actors in the Kuang Hoo Community Trust case struggled to innovate in way that

responded to the local environment. We underscore the importance of understanding and trying to respond systematically to local and environmental conditions.

Our research also contributes to current understandings of ***social innovation.*** In Chapter 2, we introduced social innovation as changes that are "socially oriented" (Cassiolato, Soares, & Lastres, 2008), and that improve the livelihoods of people first and foremost (Soares, Cassiolato, & Lastres, 2008; Dagnino, 2010). While this understanding helped us shed light on interactions between actors, at times we questioned if it was being used as a catch-all for any number of interactions. We return to Cozzens and Sutz (2012), who stress:

> Five characteristics seem especially important for recognizing, describing and assessing innovation in informal settings, both as processes and as outcomes: (i) newness, (ii) adaptation, (iii) interactiveness, (iv) knowledge content, and (v) the learning, scaling-up and diffusion perspective. (p. 30)

Reviewing this definition, we want to again highlight the importance of impact in understanding innovation for inclusive development. While this report was primarily an effort to trace interactions—not to evaluate interactions or rank how innovative they were, we acknowledge that—to some extent—evaluating innovations may help to inform policies or to support future efforts.

While our study contributed to current understandings in the field, we also hope that it serves as a catalyst for future research. For example, future studies could use our proposed/working understanding of environmental innovation to critically examine local and environmental realities. Just as we pointed out the limitations of using social innovation as a catch all for all interactions, future studies could also try to evaluate innovation or to consider the impact of innovation on inclusive development. Given that our study has pointed to the importance of entrepreneurial efforts in a country with few employment options, future research could focus on the work of entrepreneurs, researching from their standpoint and considering their potential to bring about inclusive development locally. Further, while our study focused on interactions between universities and those in the informal sector, future studies could examine interactions between the formal sector, public sector, and private sector. Future studies could explore more-broadly what role university and community actors play in the national system of innovation.

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APPENDICES

APPENDIX A

1. How does interaction with external social partners fit into the main **mission**s of your university?

    *   What is the intended balance between teaching and learning, research and innovation, and outreach?
    *   How do you expect academics to address these?

2. What are the main **types** of interaction that take place in your university?

3. Have you put in place any **institutional policies** to support interaction to the mutual benefit of external social actors?

    *   What are these policies?

    *   What are the main concepts used to describe interaction? (eg community engagement, service, extension, technology transfer)

    *   To what extent are these policies **coordinated** with your strategic thrust?

4. What are the **institutional structures and processes** you have tried to put in place to promote interaction with external social actors, particularly communities and local actors?

    a. Internal interface mechanisms (e.g. research and innovation office, engagement office)

    b. External interface mechanisms (e.g. technology transfer office, extension office, community forum)

    c. Decision making structures (e.g. senate, deans, special committees)

5. What are the specific **incentive mechanisms** you have put in place to promote interaction with external social actors, particularly communities and local actors?

    *   Internal mechanisms (e.g. performance criteria, special awards)

    *   External mechanism (e.g. newsletters, special funds)

6. What are your successes in terms of the **outcomes** of interactive activities? In what ways has interaction resulted in inclusive development?

7. Where have you encountered **bottlenecks**? What are the main **obstacles** to interaction and innovation with communities particularly?

APPENDIX B

Name of department:

Academic rank:

Disciplinary field:

Highest qualification:

1. **To what extent do you interact through your academic scholarship with any of these external social actors?**

	External social actors	Not at all	Isolated instances	On a moderate scale	On a wide scale
		1	2	3	4
1	Local government agencies (e.g VDC, kgotla)	☐	☐	☐	☐
2	District Councils/ regional government departments or agencies	☐	☐	☐	☐
3	National government departments	☐	☐	☐	☐
4	Clinics and health centers	☐	☐	☐	☐
5	Schools (e.g primary- secondary)	☐	☐	☐	☐
6	National regulatory and advisory agencies (e.g BOTA, BOBS, TEC)	☐	☐	☐	☐
8	Individuals and households	☐	☐	☐	☐
9	A specific local community	☐	☐	☐	☐
10	Welfare agencies	☐	☐	☐	☐
11	Non-governmental agencies (NGOs)(e.g Ditshwanelo, Emang Basadi)	☐	☐	☐	☐
12	Development agencies	☐	☐	☐	☐
13	Trade unions	☐	☐	☐	☐
14	Civic associations	☐	☐	☐	☐
15	Community organizations (e.g CBOs)	☐	☐	☐	☐
16	Social movements	☐	☐	☐	☐
17	Political organizations	☐	☐	☐	☐
18	Religious organizations	☐	☐	☐	☐
20	Large national firms (Debswana, DTCB)	☐	☐	☐	☐
21	Small, medium and micro enterprises	☐	☐	☐	☐
22	Multi-national companies (De Beers)	☐	☐	☐	☐
23	Small-scale farmers (non-commercial)	☐	☐	☐	☐
24	Commercial farmers	☐	☐	☐	☐
25	Sectoral organisations	☐	☐	☐	☐
26	National universities	☐	☐	☐	☐
27	Universities in Africa	☐	☐	☐	☐
28	International universities	☐	☐	☐	☐
29	Legislature (e.g Parliament, Ntlo ya Dikgosi)	☐	☐	☐	☐
30	Funding agencies	☐	☐	☐	☐
31a	Other	☐	☐	☐	☐
31b	Specify				

2. To what extent does your academic scholarship involve these types of relationship with external social actors?

	Types of relationship	Not at all	Isolated instances	On a moderate scale	On a wide scale
		1	2	3	4
1	Alternative modes of delivery to accommodate non-traditional students (e.g eLearning)	☐	☐	☐	☐
2	Work-integrated learning (e.g internships)	☐	☐	☐	☐
3	Education of students so that they are socially responsive	☐	☐	☐	☐
4	Service learning	☐	☐	☐	☐
5	Student voluntary outreach programmes (e.g SRC	☐	☐	☐	☐
6	Collaborative curriculum design	☐	☐	☐	☐
7	Continuing education or professional development	☐	☐	☐	☐
8	Customised training and short courses	☐	☐	☐	☐
11	Policy research, analysis and advice	☐	☐	☐	☐
12	Expert testimony (e.g Legal opinions)	☐	☐	☐	☐
13	Clinical services and patient or client care	☐	☐	☐	☐
14	Design and testing of new interventions or protocols	☐	☐	☐	☐
15	Design, prototyping and testing of new technologies	☐	☐	☐	☐
17	Monitoring, evaluation and needs assessment	☐	☐	☐	☐
18	Research consultancy	☐	☐	☐	☐
19	Technology transfer	☐	☐	☐	☐
21	Contract research	☐	☐	☐	☐
22	Collaborative R&D projects	☐	☐	☐	☐
23	Community-based research projects	☐	☐	☐	☐
24	Participatory research networks	☐	☐	☐	☐
25	Joint commercialization of a new product	☐	☐	☐	☐
26a	Other	☐	☐	☐	☐
26b	Specify				

3. To what extent have you used each of the following channels of information to transfer your knowledge to external social actors?

	Channels of information	Not at all	Isolated instances	On a moderate scale	On a wide scale
		1	2	3	4
1	Public conferences, seminars or workshops	☐	☐	☐	☐
2	Informal information exchange	☐	☐	☐	☐
3	Radio, television or newspapers	☐	☐	☐	☐
4	Popular publications	☐	☐	☐	☐
5	Interactive websites	☐	☐	☐	☐
6	Students	☐	☐	☐	☐
7	Reports and policy briefings	☐	☐	☐	☐
8	Oral or written testimony or advice	☐	☐	☐	☐
9	Training and capacity development or workshops	☐	☐	☐	☐
10	Demonstration projects or units	☐	☐	☐	☐
11	Research contracts and commissions	☐	☐	☐	☐
12	Technology incubators or innovation hubs	☐	☐	☐	☐
13	Intervention and development programmes	☐	☐	☐	☐
14	Software development or adaptation for social uses	☐	☐	☐	☐
15	Participatory or action research projects	☐	☐	☐	☐
16	Cross-disciplinary networks with social partners	☐	☐	☐	☐
17	Technology development and application networks	☐	☐	☐	☐
19	Patent applications and registration	☐	☐	☐	☐
20	Spin-off firms from the university (commercial or not for profit)	☐	☐	☐	☐
21a	Other	☐	☐	☐	☐
21b	Specify				

4.   To what extent has your academic Interaction with external social actors had the following outputs?

	Outputs	Not at all	Isolated instances	On a moderate scale	On a wide scale
		1	2	3	4
1	Graduates with relevant skills and values	☐	☐	☐	☐
2	Academic publications	☐	☐	☐	☐
3	Dissertations	☐	☐	☐	☐
4	Reports, policy documents and popular publications	☐	☐	☐	☐
5	Cultural artefacts	☐	☐	☐	☐
6	Academic collaboration	☐	☐	☐	☐
7	Spin-off companies	☐	☐	☐	☐
8	Community infrastructure and facilities	☐	☐	☐	☐
9	New or improved products	☐	☐	☐	☐
10	New or improved processes	☐	☐	☐	☐
12	Scientific discoveries	☐	☐	☐	☐
13a	Other	☐	☐	☐	☐
13b	Specify				

5. **To what extent has your academic Interaction had the following outcomes or benefits?**

	Outcomes and benefits	Not at all	Isolated instances	On a moderate scale	On a wide scale	Database variable name
		1	2	3	4	
1	Public awareness and advocacy	☐	☐	☐	☐	q51
2	Improved teaching and learning	☐	☐	☐	☐	q52
3	Community-based campaigns	☐	☐	☐	☐	q53
4	Policy interventions	☐	☐	☐	☐	q54
5	Intervention plans and guidelines	☐	☐	☐	☐	q55
6	Training and skills development	☐	☐	☐	☐	q56
7	Community employment generation	☐	☐	☐	☐	q57
8	Firm employment generation	☐	☐	☐	☐	q58
9	Firm productivity and competitiveness	☐	☐	☐	☐	q59
10	Novel uses of technology	☐	☐	☐	☐	q510
11	Improved livelihoods for individuals and communities	☐	☐	☐	☐	Q511
12	Improved quality of life for individuals and communities	☐	☐	☐	☐	q512
13	Regional development	☐	☐	☐	☐	q513
14	Community empowerment and agency	☐	☐	☐	☐	q514
15	Incorporation of indigenous knowledge	☐	☐	☐	☐	q515
16	Participatory curriculum development, new academic programmes and materials	☐	☐	☐	☐	q516
17	Relevant research focus and new research projects	☐	☐	☐	☐	q517
18	Academic and institutional reputation	☐	☐	☐	☐	q518
19	Theoretical and methodological development in an academic field	☐	☐	☐	☐	q519
20	Cross-disciplinary knowledge production to deal with multi-faceted social problems	☐	☐	☐	☐	q520
21a	Other	☐	☐	☐	☐	q521a
21b	Specify					q521b

6. In your experience, how important are the following obstacles and challenges to your academic Interaction with external social actors?

	Obstacles and challenges	Not important	Slightly important	Moderately important	Very important	Database variable name
		1	2	3	4	
1	Limited financial resources for competing university priorities	☐	☐	☐	☐	q61
2	Lack of clear university policy and structures to promote Interaction	☐	☐	☐	☐	q62
3	University administration and bureaucracy does not support academic Interaction with external social partners	☐	☐	☐	☐	q63
4	Competing priorities on time	☐	☐	☐	☐	q64
5	Too few academic staff	☐	☐	☐	☐	q65
6	Institutional recognition systems do not reward academic Interaction activities sufficiently	☐	☐	☐	☐	q66
7	Risks of student involvement in Interaction with external social partners	☐	☐	☐	☐	q67
8	Tensions between traditional and new academic paradigms and methodologies	☐	☐	☐	☐	q68
9	Sustainable external funding	☐	☐	☐	☐	q69
10	Negotiating access and establishing a dialogue with external social partners	☐	☐	☐	☐	q610
11	Unequal power relations and capabilities in relation to external social partners	☐	☐	☐	☐	q611
12	Legal problems	☐	☐	☐	☐	q612
13	Lack of mutual knowledge about partners' needs and priorities	☐	☐	☐	☐	q613
14a	Other	☐	☐	☐	☐	q614a
14b	Specify	☐	☐	☐	☐	q614b

7. Finally, can you describe the best example of your academic teaching, research or outreach projects in which you interacted with external social actors over the last two years?

Example of projects
  • What was the main aim of the project?   • What social actors were involved?   • What kinds of relationship were involved?   • What channels of information were used?   • What were the outputs?   • What were the outcomes and benefits?   • What were the obstacles and challenges?

APPENDIX C

Name of department:

Academic rank:

Disciplinary field:

Highest qualification:

	Reason for no Interaction	Not important	Slightly important	Moderately important	Very important
		1	2	3	4
1	Interaction is not appropriate given the nature of my academic field or discipline	☐	☐	☐	☐
2	Interaction is not central to my academic role	☐	☐	☐	☐
3	Pressures of teaching and research on my time are too great	☐	☐	☐	☐
4	My department or faculty does not promote Interaction	☐	☐	☐	☐
5	Lack of clarity on the concept of external interaction in my university	☐	☐	☐	☐
6	Institutional recognition systems do not reward Interaction activities sufficiently	☐	☐	☐	☐
7	Limited financial resources are available	☐	☐	☐	☐
8	University administration systems do not support Interaction	☐	☐	☐	☐
9	Lack of clear university policy on Interaction	☐	☐	☐	☐
10	Lack of clear university structures to promote Interaction activities	☐	☐	☐	☐
11	Lack of recognition of Interaction as a valid type of scholarship in my university	☐	☐	☐	☐
12	Differences between university and social partner priorities and needs are too great	☐	☐	☐	☐
13	Lack of social partners' knowledge about research activities and priorities in universities	☐	☐	☐	☐
14a	Other	☐	☐	☐	☐
14b	Specify				