SANORD
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STRENGTHENING THE ROLE OF UNIVERSITIES AS HUBS OF DEVELOPMENT

THROUGH THE SOUTHERN AFRICAN – NORDIC UNIVERSITY CENTRE (SANORD)

Proceedings

AARHUS UNIVERSITY

SANORD
Southern African-Nordic Centre

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3RD INTERNATIONAL SANORD SYMPOSIUM

AARHUS UNIVERSITY, DENMARK

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PROCEEDINGS

Preface by Pro-Rector Søren E. Frandsen

Aarhus University, Denmark

In June 2012, Aarhus University hosted the 3rd International Sanord Symposium which brought together SANORD member universities from Southern Africa and the Nordic countries. The Symposium was the first SANORD Symposium to be conducted in a Nordic country, and it included among its speakers the Danish Minister for Development Christian Friis Bach who stressed the importance of universities as hubs of development in both northern and southern countries.

SANORD is a unique organization which is established and maintained solely by the member organizations. It serves to maintain the special historical bonds between the Nordic and the Southern African countries. SANORD conferences and symposia play a pivotal role in maintaining these bonds and stimulating their translation into institutional and individual collaboration in teaching and research.

It was a great pleasure to welcome so many dedicated participants to Aarhus University and our lovely city of Aarhus - each of us with an ambition to share ideas, experiences and perspectives on issues of common interest and by doing so to create mutual benefits. It was also a great pleasure to note that 46 of the 88 participants were from Southern African universities, and that a number of contributes were themselves expressions of north-south collaboration in the spirit of SANORD's objectives. The balanced mix of perspectives served as a very fruitful basis for discussions that resulted in a highly successful symposium.

The present collection of papers from the conference documents some of the important discussions within the three sub-themes of the conference – university governance; synergies in north-south collaboration; and future research priorities. It is my hope that their publication as an open-access e-book will serve to inspire the continued discussion of these important topics among SANORD members and beyond. In particular, it is my hope that some of the knowledge shared and developed together will be brought into play nationally and internationally and that it might strengthen or even change the mind-set of our researchers and students in favour of their ability to innovate, cooperate across disciplines, sectors and borders and not to forget – to execute – to make things happen.

Søren E. Frandsen
Pro-Rector
Aarhus University

Preface by Chair of SANORD Astri Andresen

University of Bergen, Norway

Organizations aiming at the promotion of research able to expand and extend our knowledge need a setting where new questions can be raised, and new results discussed and critiqued. Organizations connecting people across countries and continents need a meeting place where people can get to know each other and to discuss issues concerning both the past and the future. For SANORD the key meeting place for scholars, administrators and University leaders from the South and the North have been our international symposiums and conferences.

In early June 2012 the third SANORD Symposium was arranged at University of Aarhus, Denmark. Three topics were addressed: University Governance, Synergies in North-South Collaboration, and Tomorrow's Common Research Priorities. This volume contains a selection of papers that were contributed to the conference. The papers present a range of different perspectives, thus illustrating the dialogue between universities in the Southern African and Nordic regions. I am convinced both those who did not attend the conference, as well as those who were present, will find something of importance and interest in this publication.

Conference proceedings cannot convey the vibrant atmosphere at the SANORD Aarhus Symposium. Delegates, the Aarhus University rector and the local SANORD representatives contributed to creating this welcoming and stimulating environment. By doing so, they also furthered the Southern African and the Nordic collaboration. Let me express my sincere thanks to everyone who made this publication possible.

Professor Astri Andresen
University of Bergen
SANORD Chair

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Introduction

Jens Seeberg
Aarhus University, Denmark

While competition between universities has increased dramatically at a global level, international collaboration among universities is both a competitive criterion and a measure to strengthen the capacity of the universities that are successful partners in global knowledge networks. A university's international networks and is directly linked to its performance and its contributions to the development of the surrounding society at the national and regional levels. The SANORD 2012 International Symposium at Aarhus University sought to address three important thematic in the context of collaboration between universities in Southern Africa and the Nordic countries, namely:

- University Governance;
- Synergies in North-South Collaboration;
- Tomorrow's Common Research Priorities.

In line with the spirit of SANORD, this E-volume contains the conference proceedings based on a selection of papers that contribute to the three sub-themes from a range of different perspectives, thereby exemplifying the dialogue between universities from southern African and Nordic SANORD member universities.

University governance: Building institutional capacity for participation in international knowledge networks

University organization and governance may be structured in ways that facilitate international collaboration and partnering. Universities may actively improve their own capacity to contribute and learn, as organizations, from interaction with other universities around the globe, and they may encourage researchers to be involved in international networks; regularly, there may be a need to revise and strengthen such structures, and there may be identifiable structures that establish barriers for international collaboration within the university. The four papers in this section describe specific projects that point to important development areas for university governance in an era of internationalisation. **Niikondo**, **Olivier** and **De Sibandze** discuss experiences with the internationalisation plan of Polytechnic of Namibia and emphasize the importance of global partnerships as enablers of universities as hubs of development in resource-poor settings. Among other important lessons, they point to the need for engagement and participation in international collaboration among academic staff and students within their university. **Christo Botha** and **Myburgh** reflect on a North-South veterinary partnership sponsored by Norway and including a number of SANORD partners. They critically discuss the role of the 'money', i.e. the potential conflict between monetary and academic motivations for collaboration. While they observe that excellent results have been achieved by the project, they point to the issue of sustainability and the challenges involved in continuous funding after the initial two five-year periods come to an end. **Louis Botha** changes from the standard institutional focus in discussions of university governance to the importance of personalised collaborative structures. Through examples, he shows that personal network relations across north-south university collaboration is of pivotal

importance and he points to the need to more fully acknowledge such non-quantifiable dimensions of successful international partnering. In the final contribution in this section, **Monyatsi** and **Phibion** critically assesses University of Botswana's involvement in a North-South-South project on "Music, Education, and Cultural Identity". They identity a range of benefits that have emerged from participation in the project and conclude that it has contributed to the university's ability to manage international students, conduct teaching in diverse students populations and enhance cross-cultural understanding.

Synergies in North-South collaboration: From bilateral collaboration to knowledge coalitions?

The potential number of university collaborations that any given university is involved in is very large and it may be difficult to avoid duplication of efforts that are addressing similar or identical needs at different levels or in different parts of a given university. There is a clear global trend to move from bilateral partnerships to strong functional partnerships between multiple universities. This holds true for research, education and outreach activities. In projects that seek to strengthen institutional capacity there is a demand to ensure that projects are relevant in terms of existing needs and that they are aligned with similar initiatives that may already take place. This section explores the distribution of roles and responsibilities in this area in the context of North-South collaboration and it asks how SANORD actively and strategically may contribute to strengthening coordination and alignment.

Sundin, **Abrahamsson** and **van Groningen** open this section with reflections on the International Science Programme that has been involved in capacity building in developing countries for the past 50 years. Their contribution provides an excellent argument in favour of the benefits of long-term programmes for university-level capacity strengthening, and they point to excellent results in a number of cases. However, perhaps indirectly, their contribution also indicates the deciding power of donors (in this case Swedish SIDA) in the choice of partner countries. This highlights that while a programme may have a long life in the North, this may not always be the case for all the involved south partners, as they are vulnerable in the face of donor policy changes. **Seeberg** addresses this point more directly in his paper, which describes an initiative taken by Universities Denmark to engage in long-term collaboration for institutional capacity strengthening in partnership with a number of universities in Africa and Nepal. He argues that competitive bidding for funding and tasks does not necessarily constitute a relevant mechanism for quality assurance of capacity strengthening activities, because trust and collaboration are necessary components of successful partnerships. In his epilogue, he notes that the sudden and surprising decision of the funding agency to take over the project from Universities Denmark and abolish the governance structure that had been established, and also to phase out a number of partners and countries irrespective of performance, demonstrate that North-South university collaboration is vulnerable in the face of sudden changes in donors' policies.

Eta, in her contribution, also discusses a donor-funded collaborative project on student and staff mobility between universities in Finland and a number of African countries. Eta describes the overlaying country selection criteria at national and institutional level and the way this leads to a closed group of participants. Based on a study among involved staff and students she also discussed the motivations that inform student mobility in this case.

Lindström and **Suominen** describe in detail a course on sustainable use of tropical soils that was initially developed by a Nordic university network (NOVA) and a group within this, called Soil and Society. The course attempted to utilize the Moodle learning environment but faced problems with internet speed in Ethiopia where the course was initially conducted. The course used problem-based learning, which was generally well-received, and it was planned to offer the course to students from Zimbabwe, and South Africa as well.

Flinkenflögel and **Kallestrup** discuss the history of primary health care and the development of family medicine training in Anglophone Sub-Saharan Africa, and they focus in particular on the Primafamed network as an example of South-South collaboration. Primafamed seeks to strengthen family medicine education in Africa. The concept of family medicine is still new and the authors point to the need for continued support and involved of northern universities and non-governmental organizations.

The final contribution of this section focuses on the need to strengthen communication as an integral component of multi-disciplinary and international – indeed inter-continental – collaboration. Using the Network for the Coordination and Advancement of sub-Saharan Africa-EU Science and Technology Cooperation (CAAST-Net) as an example, Plath discusses the potential role of social media both as a changer of communication patterns and as a way to add value to collaborative projects.

Tomorrow's common research priorities for Nordic and Southern African universities
Contributors in this sub-theme were encouraged to present visionary papers for multidisciplinary areas of research that are considered of particularly high importance for SANORD's member universities and member countries. In the context of this symposium, it is obviously not wise to aspire for a set of research priorities that could direct the involved countries. Instead, a number of papers have contributed to illustrate the disciplinary breadth of SANORD members and to potentially inspire new areas of collaboration in the future. Indeed, the very understanding of the future itself may be one such area, as pointed out in the paper by **Fox**, **Rowntree** and **Kaskinen**. They point to the well-established tradition of future studies in the Nordic region and lament their near-total absence in Africa. The paper analyses the future scenario of higher education in the Southern African Development Community (SADC) and notes the difficulties entailed in obtaining funding for this type of research.

Taking as her point of departure the increasing global migration and the resulting growing diversification of populations both in the Nordic countries and in Southern Africa, **Petersen** argues that studies of demographic and cultural diversification and its dynamic relationships with constructions of national identities constitute an important area of future research collaboration within SANORD. She proposes that multi-sited methods can be used in obtaining a bi-regional perspective on transnational migrants across the two regions.

Howard and **Singh**, in their contribution, focus on risk and vulnerability assessment and use experiences from the Risk and Vulnerability Assessment Centre (RVAC) at University of Limpopo to identify a series of specific research areas where they see a scope for fruitful research partnerships within the SANORD group, especially with regard to the Grand Challenges Programme.

Sartas et al. discuss a number of underutilised indigenous plants in the context of challenges for livelihoods caused by climatic, technological and demographic developments coinciding with certain economic and political paradigms that have accelerated inequity. They use a value chain approach and argue that indigenous plants offer a huge potential for achieving sustainable development and poverty alleviation, and that this area constitutes a major research gap.

Participatory design (PD) approaches have been used widely in the Nordic countries and other Western contexts, but less in developing countries, according to **Messeter**, **Claassen** and **Finnan**. In their paper, they describe two examples of use of participatory design in South Africa, in a wine farm in Western Cape and in the case of distribution of hyper-local story-telling in a socially challenges suburb in Cape Flats, Cape Town, respectively. The authors discuss the democratic values inherent in participatory design approaches and their possibilities and limitations in African contexts, and highlight how these played out in their two case studies. They argue that further research on the use of PD methods across different cultural and social contexts is required, with a focus on developing countries and inclusion of urban areas.

In the final paper of the collection, **Svensson** and **Wamala** discuss the impact of the recent explosion of mobile communication in developing countries and the need to strengthen the emerging academic field of Mobile Communication for Development (M4D). While seeking to explore the possibility of establishing M4D as a research priority for SANORD cooperation, they point to the social importance of mobile communication in areas such as health, transfer of money, improvement of livelihood, governance and learning. They point to the need for critical perspectives, including involvement of gender studies, and they imply that SANORD could be involved in shaping the academic field of M4D.

Editorial note

The above papers provide an excellent insight into the scope and quality of the SANORD International Symposium at Aarhus in 2012. They demonstrate the effort of SANORD to bring together university leadership, international relations officers and researchers in fruitful North-South interaction. This variation has been maintained in the papers published in this volume. While the abstracts originally submitted for the symposium were peer reviewed by a multi-disciplinary panel, the final papers have not been peer reviewed again, and they have only been lightly edited for language and clarification, not for academic content.

SUB-THEME

University Governance:
Building institutional capacity for participation in international knowledge networks

Universities as hubs for development
The internationalisation plan of the Polytechnic of Namibia

Andrew Niikondo, Neveara Olivier and Elva A. Gomez De Sibandze
Polytechnic of Namibia

Abstract
The internationalisation plan of the Polytechnic of Namibia (PoN) includes three main areas of development, namely Education, Research and Training, and Institutional Services. These areas are intertwined, however, and they will thus require equal consideration in order for this institution to be transformed into a Hub for Development. Since its creation, the PoN has enjoyed the benefits of partnerships that allowed networking, staff and student exchanges,as well as curriculum development. However, an assessment of the internationalisation plan is due in order to plan for improved future collaborations, based on the needs of this nation. The United Nations Millennium Development Goal Eight (MDG8)[1] emphasises the importance of developing global partnerships in order to uplift developing countries from extreme poverty and exclusion by promoting education. Furthermore, Namibia's Development Plan Three [2]highlights the crucial role that smart partnerships have played and can continue to play in the country's achievements since its independence in 1990. The PoN's partners are very important in the internationalisation process, as they share the vision of transforming universities into hubs for development. In order to improve this internationalisation process at the PoN, this research will explore reports and individual assessments from different partners, both locally and internationally. Findings from this study will assist in the writing of the action plan and will provide guidelines for future collaborations.

> "Knowledge societies are about capabilities to identify, produce, process, transform, disseminate and use information to build and apply knowledge for human development" (UNESCO, 2009, p. 27).

In 2005, the United Nations General Assembly designated UNESCO as the lead agency for the promotion of Education for Sustainable Development (2005–2014) (UNESCO, 2009, p. 142). During this time, developing and industrialised countries have been focusing on education for sustainable development in many parts of the world; consequently, institutions of higher education play a crucial role in this endeavour. However, since there is no universal educational model in this field, each country has been encouraged to define its own priorities and intervention strategies, taking into account the environmental, social, cultural and economic conditions of each region.

Furthermore, in 2009, during the World Conference on Higher Education and Research for Societal Change and Development, it was emphasised that internationalisation should be encouraged, despite the economic downturn. The reason for this is that higher education institutions are responsible for bridging the development gap by increasing the production and transfer of knowledge, particularly in the developing world.

At the national level, Namibia's Development Plan Three (National Planning Commission, 2008, p. 9) highlights the crucial role that Smart Partnerships have played and can continue

1 Available at:http://www.un.org/millenniumgoals//global.shtml [Accessed 05 June 2012]
2 Available at: http://planipolis.iiep.unesco.org/upload/Namibia/Namibia_NDP3_Vol.1_Revised_ Draft_05.06.2008.pdf [Accessed 05 June 2012]

to play in the country's achievements since its independence in 1990. These partnerships should include representatives from all sectors of society in order to achieve the development goals.

The PoN's Strategic Plan Three (Polytechnic of Namibia, 2009, p. 5), for the period of 2009-2013 emphasises the need for the institution to maintain the momentum gained, while enhancing the efficiency with which it responds to the changing market needs, as it matures into a truly internationally recognised university of science and technology.

Overview

This study assesses the PoN's internationalisation plan and processes between 2009 and 2013. This time-period coincides with PSP 3, and includes three main areas of development, namely, Education, Research and Training, and Institutional Services. All of these areas are intertwined, and they will require equal consideration in order for this institution to be transformed into a Hub for Development. Hence, this paper evaluates the status quo with regard to international partnerships and its impact on Education, Research, Training, and on the Institutional Services of the PoN. However, there seems to be a deficiency in the implementation of international networks at the PoN and thus there is a need for an evaluation of current international partnerships to improve and build upon current practices.

In order to improve the plan of the internationalisation process at the PoN, this research will examine reports and individual assessments from different partners, both locally and internationally. Findings from this study will assist in the writing of the PoN Strategic Plan Four (PSP 4) for 2012-2015 and will provide guidelines for future collaborations.

International Education and Knowledge Society

International quality and standard of education is crucial for developing countries such as Namibia, to ensure their participation in the knowledge society. A knowledge society is "a society nurtured by its diversity, its capacities, [and] its own knowledge assets" (UNESCO, 2009, p. 17). International education can connect "the forms of knowledge that societies [in different parts of the world] already possess" (UNESCO, 2009, p. 17). These forms of knowledge not only include scientific and technological knowledge but also certain forms of local and indigenous expertise and knowledge.

Institutions of higher education play an important role in knowledge societies with regard to the production, dissemination and application of relevant knowledge; they can thus be hubs for development. Although better internet connectivity is admittedly needed in sub-Saharan Africa to bridge the digital gap, institutions of higher learning are nonetheless responsible for developing the skills needed to produce and provide access to new and quality knowledge.

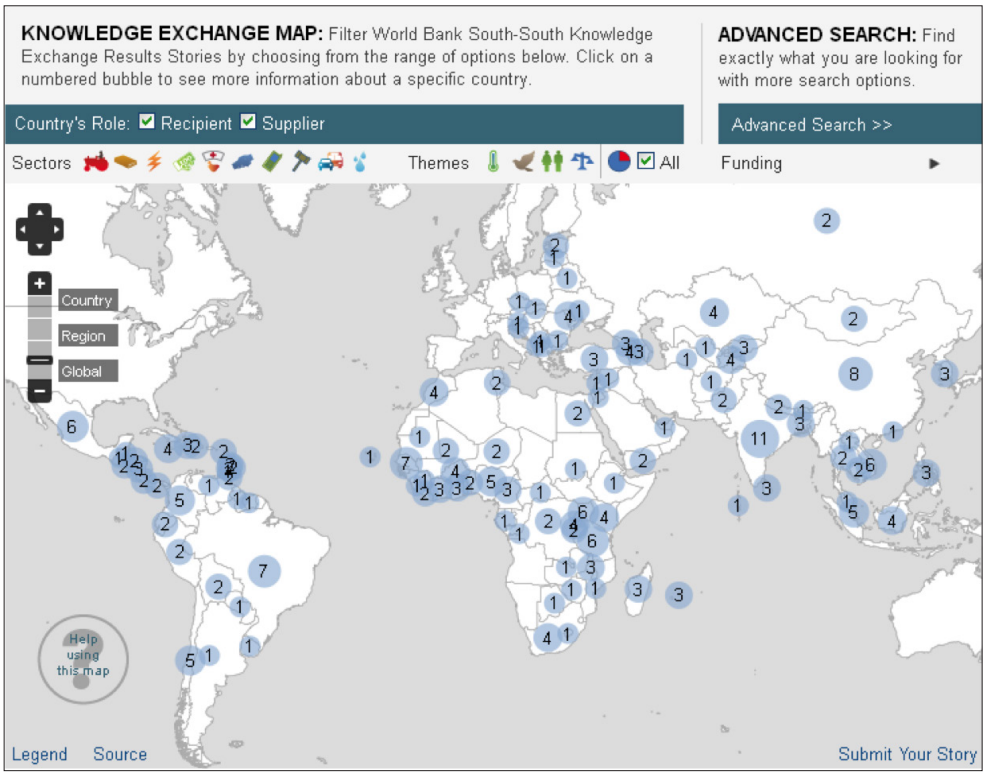
The Benefits of International Education

The main benefits of the internationalisation of education are knowledge and resource sharing, the creation of partnerships and networks, as well as curriculum development. These benefits can only materialise with appropriate systems of international cooperation.

Although the PoN has over eighty active international partners, not all academic departments participate in these collaborations. Data collected from an internal survey in

the first semester of the 2012 academic year revealed that most academics are in favour of the internationalisation of the PoN, but only a few academic departments take part in this process of internationalisation through academic exchanges, curriculum development and networking with partner institutions. During the survey, the respondents were asked the following question: Do you think PoN should continue to internationalise Education and Research? All the respondents replied in the affirmative, which suggests a widespread willingness to participate in this process (Polytechnic of Namibia, 2012, n/p). Consequently, it will be important to identify and investigate (in future research) the barriers that discourage or even prevent so many academic departments at PoN from collaborating with international partners. This study therefore discusses the general obstacles that African countries such as Namibia might encounter in the internationalisation of education.

Figure 1: World Bank South-South Knowledge Exchange Map



Source:http://wbi.worldbank.org/sske/. Accessed: 28 March 2012

Visible and Invisible Barriers

Internationalising education in developing countries such as Namibia is a priority if the country wishes to be transformed into a knowledge society. However, the transformation process encounters and needs to overcome many barriers – both visible and invisible – such as Bills and laws that infringe the access to information. Other barriers include inadequate funding due to subsidy cuts, lack of infrastructure such as lack of offices and accommodation of visiting staff, as well as a lack of senior academic staff with sufficiently high qualifications, which places an even heavier workload on existing academics, often making it difficult to release a staff member to teach at other institutions.In addition to these barriers, the inadequate naming of the PoN, as a polytechnic rather than a university has a negative impact on this institution because the establishment of the Polytechnic of Namibia byAct No. 33 of 1994 provided for the gradual phasing out of vocational training courses and the granting of

degrees and institutions that grant degrees are regarded as a universities, not Polytechnics. Furthermore, Polytechnics do not qualify for research funding because it is understood that polytechnics do not grant degrees (undergraduate or postgraduates) and thus they do not engage in research. only As, research is one of the most important aspects for institutions of higher learning to become a knowledge society, the Polytechnic of Namibia has been negatively affected in this regard since its establishment due to its denomination. According to the World Bank,

> "Developing and transition countries are at risk of being further marginalised in a highly competitive world economy because their tertiary education systems are not adequately prepared to capitalise on the creation and use of knowledge" (World Bank, 2002, p. 77).

In addition to cost, another major challenge is the lack of knowledge and resource sharing.

In the World Bank Institute map shown in Figure 1 above, knowledge exchange between southern countries in the area of education is illustrated, and shows no recorded data from Namibia.

The reason for this lack of data could be interpreted in several ways. One possibility is that no knowledge exchange was recorded in the country at the time the data was collected; another possibility is that the country's records were not made available to the WBI researchers when compiling the map. Unfortunately, there is much room for improvement in record keeping and access to information and knowledge in Southern Africa, and in Africa in general. Although training in this regard is taking place in government offices and in the private sector, there is still much that must change and improve before acceptable international standards are attained.

Concerning access to information and knowledge in Namibia, the government has recently passed the Namibian Statistics Bill 2012, which could hinder knowledge sharing and research endeavours in the country even further because of itsoath of secrecy clause. The Statistics Bill was introduced by the Minister of Presidential Affairs to:

> "provide for the development of the National Statistics System and provide for its components and objectives; to establish the Namibia Statistics Agency and the Board of the Namibia Statistics Agency and provide for their powers and functions; to establish the National Spatial Data Infrastructure and provide for its objectives, to establish the Committee for Spatial Data and provide for its functions; and to provide for incidental matters". (Statistics Bill of Namibia, 2010, p. 2)

In Part VIII, the bill states that the researcher should take an oath of secrecy before s/he is allowed to use information or data collected. This clearly contradicts the right to access and disseminate information gathered by means of public funds because this is, in the end, public information.

Furthermore, many institutions of higher learning in Southern Africa find it difficult to access information and knowledge due to inadequate budgets. Education institutions such

as the PoN need to change their name to University of Science and Technology as they no longer provide only vocational training, but full Degrees (undergraduate and post-graduate) which are all accredited by the Namibian Qualification Authority. Polytechnics are a British conceptbrought to Africa through the globalisation of education. Even in the UK, polytechnics have changed their name in order to access funding for curriculum development and research. This matter is still to be resolved in Namibia. Meanwhile, PoN staff cannot ascend the academic ladder and be promoted to professorship, nor can they access funds or collaborate with many universities in research projects while they are employed at a polytechnic.

With the advent of globalisation, more institutions of higher learning were encouraged to privatise education and, in many cases, these institutions began to be managed as corporations. Although the "'globalisation of education' is […] promoted by governments, driven by commercial interests and accelerated by electronic communications and distance education" (Hawkridge, D., 2003) which assisted the internationalisation of education in many cases, it has also facilitated the commercialisation of education and increased the knowledge divide between institutions of higher learning in the Northern and Southern hemispheres. There is still little to no participation in knowledge creation from Southern African countries due to a lack of access to information and technology, the so-called brain drain, the prevalence of gender inequalities and a lack of resource sharing.

> "The strategic importance of knowledge is fully illustrated today by the acute character of the economic imbalances between the countries of the North and of the South, of which the brain drain is both a consequence and a cause, or again by the growing importance attached to secrecy, even in democratic societies (defence secrets, industrial or commercial secrets, secret protocols, confidential reports or classified information). In quite a number of fields, knowledge has already now become a most valuable resource which, in the twenty-first century, will increasingly determine who has access to power and to profit". (UNESCO, 2005)

In addition to the barriers mentioned at the global and regional levels regarding the creation and exchange of knowledge, the PoN is currently finding it difficult to engage in research collaborations and academic exchanges with some universities in the SADC region and overseas. This is primarily because it is called a polytechnic rather than a University. Some donors and research foundations around the world do not include polytechnics as possible partners because polytechnics are not regarded as research institutions or do not belong to the same category of institutions of higher learning that can grant degrees. The PoN's qualifications are approved and accredited by the Namibian Qualification Authority (NQA).[3] The PoN is a reputable institution that has won several awards for its performance, both locally and internationally, for example:

- PMR Diamond Arrow (2009 - 2012): best higher education institution in Namibia
- Silver Pigeon Award (2012): Best national contribution at the 2012 International Architecture and Design

3 The NQA "is a statutory body established by the Namibian Qualifications Authority Act No 29 of 1996 and it is committed to the promotion of quality education and training in Namibia through the development and management of a comprehensive and flexible National Qualifications Framework (NQF)".

- Media Institute of Southern Africa (MISA) Golden Key Award (2011): Most open and transparent government/public institution in Namibia
- Award of Excellence for Institutional Achievement in Distance Education (2010)
- Special Achievement in GIS Award (2009): Education & Training in Geographic Information Systems (GIS)
- Cisco Local Academy Award (2009); Cisco Global Recognition Award (2007)

Although this recognition was beneficial in establishing over eighty partnerships internationally, the renaming of the PoN as Namibia's University of Science and Technology would be a crucial step in the internationalisation process to encourage and facilitate academics and students from PoN to establish stronger links around the world with other universities and programmes in their field in order to exchange information, knowledge and skills, as well as to overcome barriers with regard to obtaining research funding and to increase collaborative research outputs.

Innovative and Collaborative Research and Integrating Namibia in the Global Economy
Why does the PoN need innovative and collaborative research? Nowadays we live in a globalised world, where capital, people, ideologies, and media images are transmitted around the world more rapidly and efficiently than ever before (Appudurai, 1996; Bauman, 2000; Beck, 1997; Giddens, 1996 in Stier, 2002, p.2). Namibia, as part of the global context, is facing great challenges in this decade. Issues such as global climate changes, urbanisation, water harvesting and management, among many others, create a need for collaborative research between academics at the PoN and international partners in order to acquire the necessary research capacity that can lead to smarter solutions to these issues. Therefore, the PoN is expected to strengthen its collaboration with international partners in innovative and collaborative research to address these issues and thereby to ensure sustainable development in Namibia. Moreover, by integrating Namibia into the competitive global economy, the PoN is expected to promote open collaboration research projects, with an aim to accelerate innovation that can benefit Namibians.

Importance of innovative and collaborative research
The PoN is committed to developing partnerships with global universities in the areas of teaching, research and student mobility. This will bring benefits in the form of new innovative courses and higher quality research capacity. Although PoN staff has engaged in collaborative research for many years, there is potential for this to be expanded significantly. A survey conducted among the academic staff at the PoN (2012) for this paper reveals that 65% of respondents across the different schools of the PoN either agreed or strongly agreed that collaborative research could contribute to national development plans, lead to discoveries for economic development, and improve national policies and governance.

Niche areas across schools
The Polytechnic has of late engaged in identified niche research areas linked to national development plans. One imperative for collaborative research with international partners is the development of the institutional research strategy, which will serve to provide an umbrella framework for research strategies at the school level. In this study, respondents across the different schools at the PoN identified the following as their most pertinent niche areas for increased collaborative research.

1. Engineering	10. Manufacturing
2. Environment	11. Nature conservation
3. Environmental monitoring	12. Policy research
4. Gender and economics	13. Renewable energy systems
5. New business generation	14. Staff development
6. Health	15. Sustainable development
7. Human capacity	16. Global markets
8. ICT	17. Economic
9. Land reform	18. Development

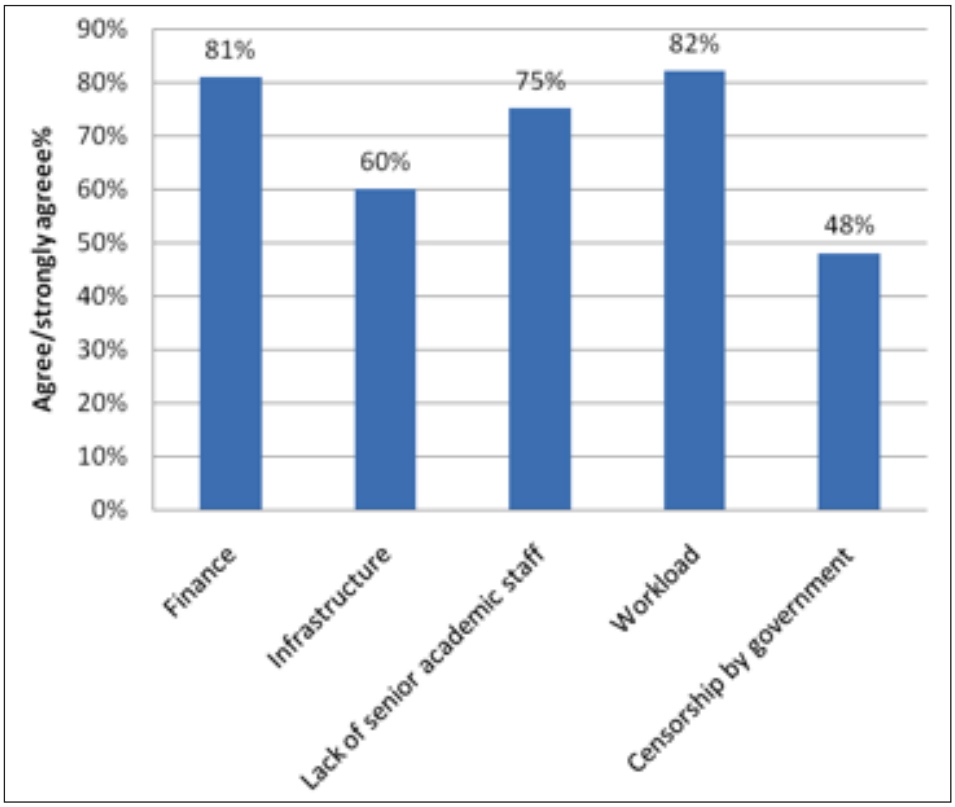
This list of niche research areas, which could be extended further, is not likely to receive proper attention due to certain challenges that make it difficult for the PoN to offer worldwide studying and lecturing opportunities whereby students and lecturers can spend time overseas at partner institutions, as well as to facilitate research and teaching collaborations with other partners.

Challenges

According to UNESCO (2009, p. 3), "higher education faces many challenges – recurrent and more recent ones – whose in-depth understanding would help to shape action at the global, regional, national and institutional level." Based on this statement, respondents were asked to identify challenges faced by the PoN when engaging in innovative and collaborative research with other universities (see Figure 2).

It is evident from Figure 2 below, that, firstly, 82% of the academic staff members interviewed at the PoN agree or strongly agree that the workload is one of the primary challenges that makes innovative collaborative research between the Polytechnic and its partners difficult. The full-time academics at the PoN are engaged to teach both full-time and part-time classes and to supervise research projects for honours students. According to the Polytechnic workload policy (2003), the breakdown of the lecturer's workload is: 60% teaching; 30% research; and 10% administration activities. The problem usually occurs in the area of teaching because 60% of teaching translates in 16 hours a week, along with large classes (which also require many hours in the marking of tests and assignment papers) and research projects. Indeed, Morrison et al. (2003,cited in Goddard, Cranston and Billot, n.d.) raised the possibility that the rising prominence of research collaborations might well add to the time and workload pressures arising from other demands that competewith research, such as teaching and administration.

Figure 2: Major challenges faced by PoN



SE&A = School of Economics and Accounting; SHAS = School of Health and Applied Sciences; SIT = School of Information and Technology; SOE = School of Engineering; SOH = School of Humanities; SOM = School of Management. Source: Internal survey (2012)

Secondly, 81% of the respondents indicated that obtaining finance or funding was a serious challenge, particularly with regard to the Polytechnic's ability to collaborate effectively with its international partners. Lack of finance means the PoN is unable to send students and lecturers to partner institutions through exchange programmes or to receive lecturers from partner institutions. In addition, the PoN cannot assist its researchers in joint research programmes with researchers from partner institutions because of insufficient finance. This concurs with Morrison et al.'s (2003, cited in Young, 2010, p.2) argument that the need to obtain funding had a significant effect on many aspects of the research projects. For instance, a lack of finance could limit international collaboration, because partners and potential partners might be unable to attend overseas conferences and workshops that are necessary for collaborative work, thus preventing face-to-face meetings among members of research teams, as well as minimising access to support structures for the research, such as that provided by quality research assistants.

Thirdly, 75% of the respondents across the PoN indicated that a lack of senior academic staff in schools was another factor that hindered effective collaboration between the PoN and other universities, especially in consortia. Partner universities usually require exchange of equals; for example, if PoN needs to send a senior lecturer to a partner, the partner needs to send a senior academic to PoN. However, PoN has a shortage of senior academics, and many partners are reluctant to exchange their senior staff with junior staff. Furthermore,

such a shortage of senior staff places an even heavier burden on existing academics and thus it is often difficult to release a staff member to teach at other institutions. Also, 60% of respondents regard PoN's inadequate infrastructure a challenge to internationalisation because the institution usually has no office spaces and accommodation for academics from partner institutions.

Challenges to Students

Many of the issues highlighted above could also be seen as challenges experienced by our students. Al-Janabi and Sverdliksuggest that the following are among the most important challenges:

- "Language: Global collaboration may be difficult among countries that speak different languages; however, Namibian students speak English, which is the most common language for global collaboration in the academic field.
- Technology Infrastructure: Specific equipment and network support may be lacking at the PoN because of financial constraints.
- Divergent Educational Backgrounds: The curricula at PONdiffer in many content areas; thus our students bring home different levels of preparation, different perspectives and diverse practical experiencefrom joint ventures.
- Timing and Schedules: There are time-zone differences between Namibia and some international partners, particularly in the United States of America. Additionally, there are obvious differences in the study systems of different countries, as well as in the start and end dates of academic terms. These impose limits on the suitable time periods that could be used to run collaborative projects especially in the early stages". (2010, N/P)

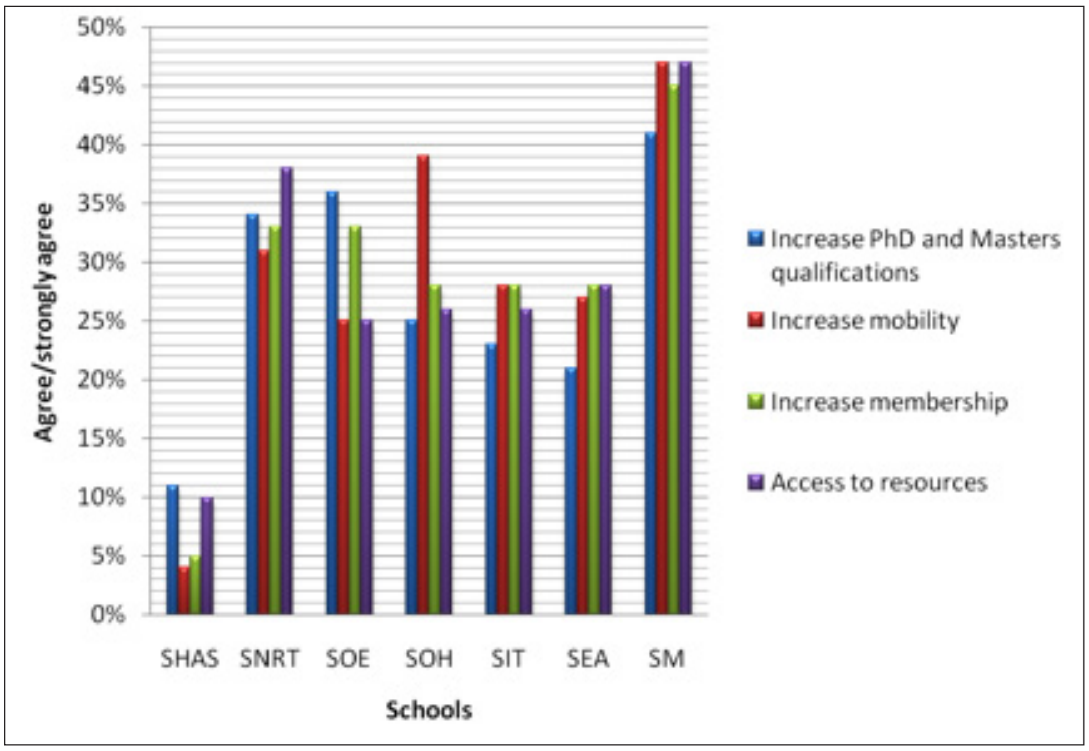
Strategies for PON

In the survey for this study, respondents were asked the following question: What strategy does the Polytechnic need to strengthen support for innovative and collaborative research? Figure 3 below shows the percentages of respondents per school in terms of how they wish the PoN to focus its strategies on improving collaborative research with international partners.

From Figure 3 below, it can be seen that the School of Natural Resources and Tourism (SNRT) is mainly interested in a strategy that focuses on accessing resources (38%), whereas the School of Engineering (SOE) prefers a strategy that may bring improvement to staff qualifications, especially PhD and Masters Qualifications (36%). Thirty-nine percent of respondents in the School of Humanities (SOH) wish the Polytechnic to strengthen its strategy ofincreasing mobility in terms of staff and student exchangeswith partner institutions, whereas 28% of respondents from the School of Information and Technology (SIT) would prefer the Polytechnic tostrengthen its strategy of improving PhD and Masters Qualifications of the faculty. Twenty-eight percent also want the PON's strategy of staff and student exchange (mobility) strengthened. Finally, the respondents in the School of Management (SOM) demanded increased mobility strategy (47%) to be a priority to be strengthened, better access to resources (47%), increased membership with international research consortia such as SANORD (45%) and increased PhD and Masters qualifications (41%) strategies as important to them.In contrast, the School of Health and Applied Science (SHAS) had little to say with regard to any strategic needs, probably because the school is

relatively new.

Figure 3: Collaborative research strategies needed by the PoN



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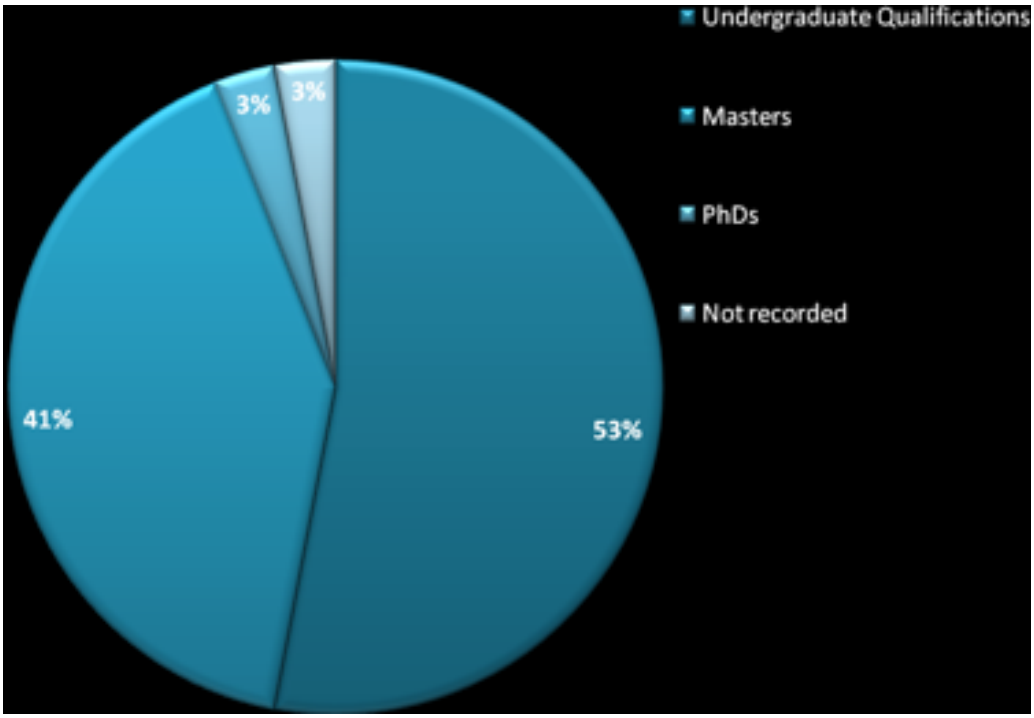
Although the abovementioned schools clearly have diverse views on the preferred research focus of the PoN, it is likely that a staff development strategy to improve the staff qualification profile is the most crucial at this stage (see Figure 4 below).

Figure 4 below shows that 53% of Namibian academic staff only have undergraduate qualifications;presumably this is different internationally, where a higher percentage of academic staff have postgraduate qualifications.Therefore, an institutional strategy focusing on the improvement of the PoN's academic profile, such as through collaborative research and partnerships, is idealbecause through these they would need to attend courses, seminars and workshops even to complete a postgraduate degree, perhaps at an overseas or regional university.

In response to open-ended questions in the survey, respondents also argued that the Polytechnic needs to have good strategies in place to engage government to provide funding and encourage collaboration in various national projects so that academic institutions could become involved with industry partners and that they need to improve the qualifications of staff, both academic and administrative in general, and not only PhDs and Masters. Furthermore, they perceive that the current institutional strategies to increase partnerships are not sufficiently effective. Finally, they also required the PoN to forward information regarding partnership opportunities and funding for staff development purposes to both

staff and students.

Figure 4: Qualification profile of Namibian faculty at the PoN



Source: Internal survey (2012)

This has been previously suggested by the Social Sciences and Humanities Research Council of Canada Strategic Plan 2006-11, which stated that:

> "strategies for achieving this include allocating more resources to supporting international collaboration, integrating more such collaboration and training into existing programmes, and developing a new suite of programmes such as the International Opportunities Fund, which target important and timely opportunities to expand faculty and students' contributions to and benefits from international research".(2006, p. 1)

A similar approach needs to be used by the PoN to encourage international collaboration.

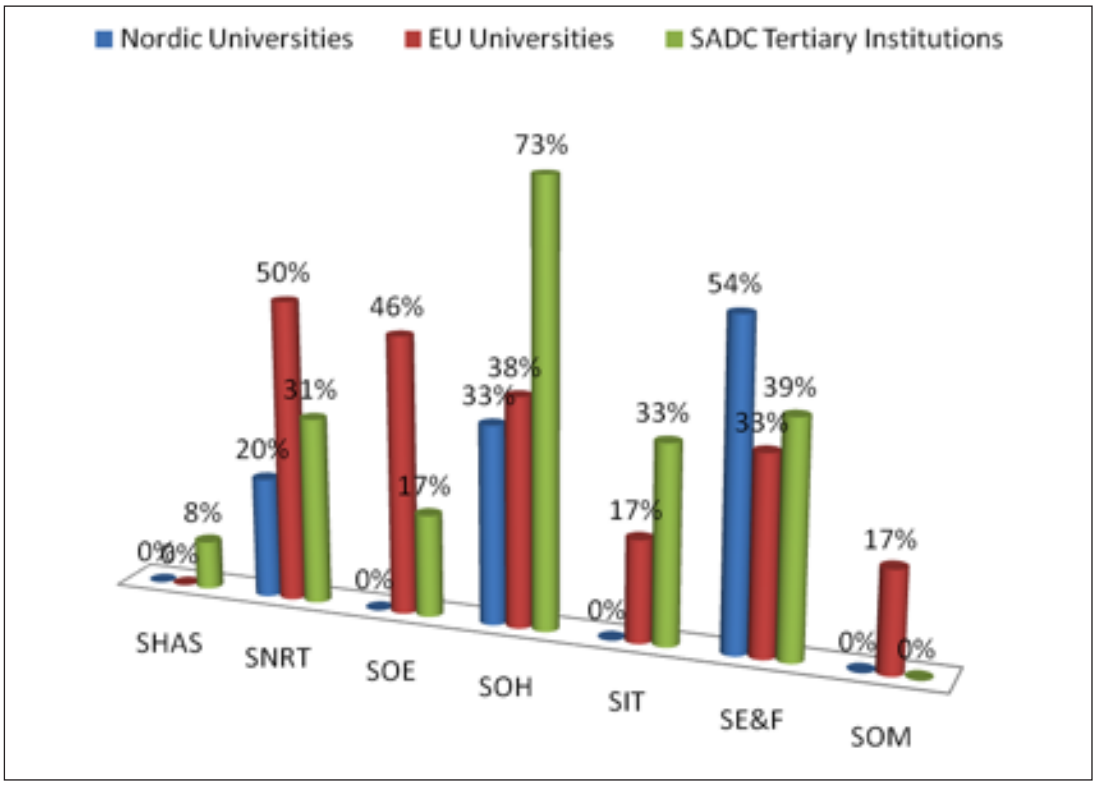
Collaboration with Nordic/EU/SADC Universities

During the survey, academic respondents were given a list of possible external collaboration partners in research and asked to select those with whom their schools and departments were currently collaborating for innovative research projects.The results are presented in Figure 5 below.

According to Figure 5 below, 73% of respondents from the SOH are collaborating mainly with instutions of higher learning in the SADC region, while 54% of respondents from the SEA are collaborating mainly with universities from Nordic countries.In addition, 50% of respondents from the SNRT and 46% of respondents from the SOE have close ties with universities in the European Union.Respondents from the SM and the SHAS are performing

below the average in terms of external parterships with Nordic, EU and SADC regions.

Figure 5: PoN'scollaboration with Nordic/EU/SADC universities



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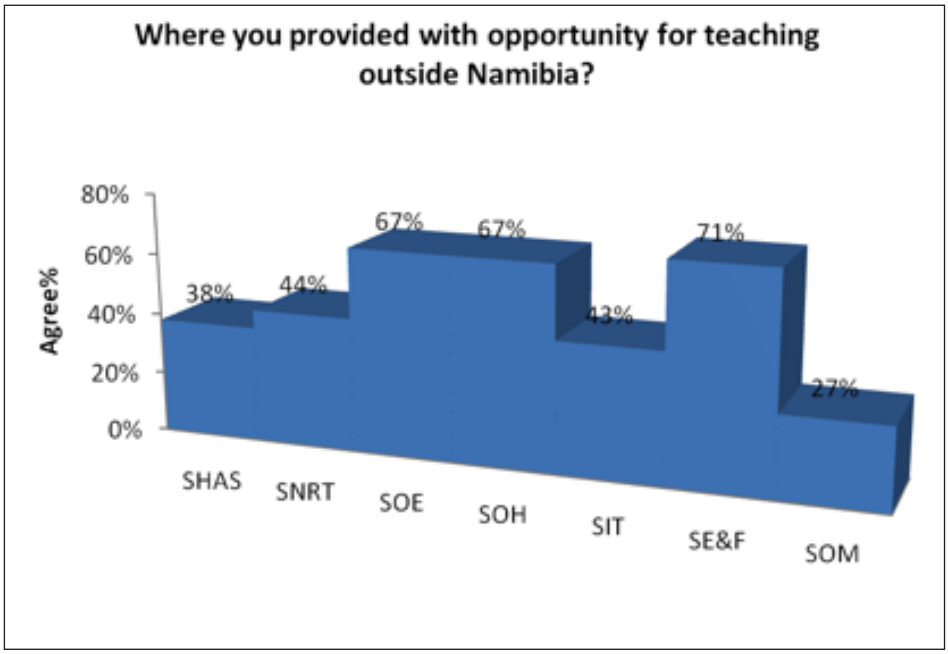
The Role of Mobility in the Internationalisation Process

The role of staff and student exchange is crucial to any institution of higher learning.Hence, UNESCO (2009, p.5) states that "partnerships for research and staff and student exchanges promote international cooperation". Since its creation, the PoN has enjoyed the benefits of partnerships that have allowed networking, staff and student exchanges as well as curriculum development; in particular, curriculum development includes lessons that faculty learnt from partner institutions regarding improvement of existing curriculums and development of new curriculums. In its PSP 3 (2009-2013) (2009, p.14), the PoN states that it needs to maintain strong partnerships with institutions globally and have agreements for institutional and programme accreditation with relevant agencies in South Africa and Europe to ensure quality teaching, learning and service delivery. In a section dealing with strategic direction, the PSP 3 (2009-2013) (2009, p.12) further stipulates that "success in achieving our vision as a leading university means that, by 2013, the institution will: Have at least one international partnership in each academic department". As part of assessing the extent of progress made in the implementation of this strategic plan, respondents were asked to indicate whether they had had any opportunities to teach outside Namibia (see Figure 6 below).

Figure 6 below reveals that 71% of respondents in the School of Economics and Finance (SE&F) have had an opportunity to teach outside Namibia, followed by the School of Engineering (SOE) and the School of Humanities (SOH) with 67% each. Although this indicates that

progress has been made with regard to implementing PSP 3, more encouragement of broadly based and balanced academic mobility is essential, and this needs to be integrated in PoN mechanisms in order to foster genuine multilateral collaboration with international partners.

Figure 6: Opportunity for teaching outside Namibia



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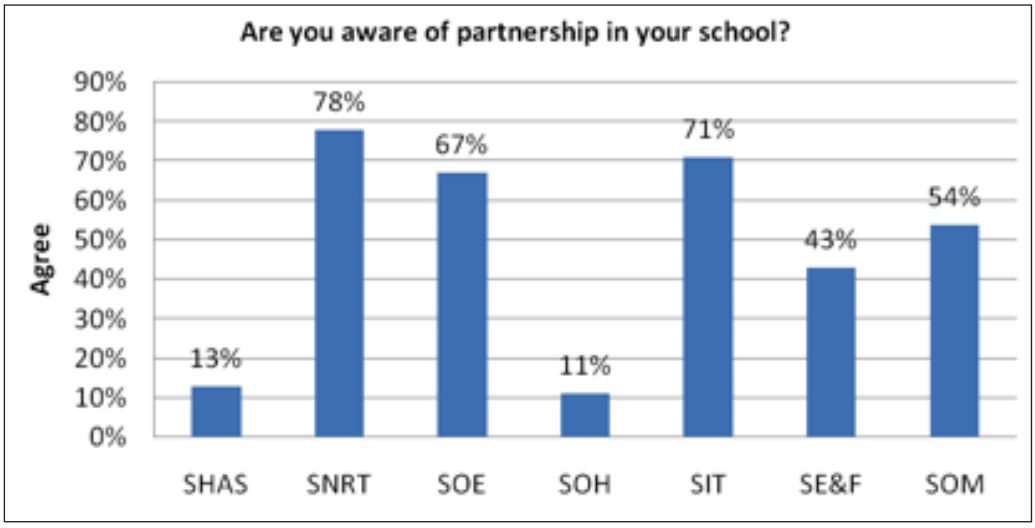
Knowledge of partnerships among PoN staff

The hypothesis is made in this study that a large number of staff members have little or no knowledge of partnerships entered into between their schools, departments and international partners. In the survey, therefore, respondents were asked whether they knew of any partnerships in their departments/schools (see results in Figure 7).

Figure 7: Staff awareness of partnership(s) in school/department



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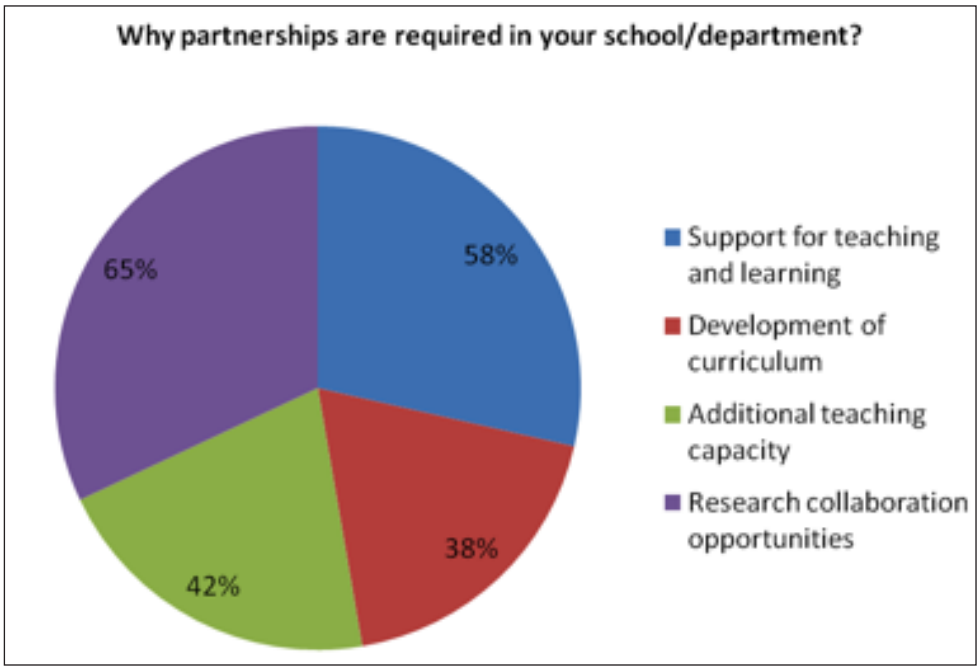
It is interesting to learn that 78% of respondents in SNRT, 71% in SIT and 67% in SOE were aware of existing partnerships within their schools. The findings relating to the SOH (11%) and the SHAS (13%) are of serious concern, however, given that so few respondents appeared to have knowledge about partnership agreements entered into between their schools and international partners.The situation at these schools definitely requires attention.

Spin-offs of academic exchange and collaboration

According to UNESCO (2009, p.5), cross-border collaboration in higher education can have a significant positive impact, if it offers quality education, promotes academic values, maintains relevance and respects the basic principles of dialogue and cooperation, mutual recognition and respect for human rights, diversity and national sovereignty. The respondents in this study were asked to list the positive spin-offs that they wanted to achieve from academic exchanges and collaborative activities (see Figure 8).

Figure 8: Expected spin-offs



Source: Internal survey (2012)

Based on Figure 8 above, 65% of respondents across all the schools at the PoN indicated that they expected positive spin-offs in research collaboration opportunities, while 58% placed the greatest emphasis on support for teaching and learning. This is supported by findings from the literature, such as a report from Towson University (2012: no page) in the United States of America, which states:

> "An international exchange is an enriching experience on many levels. It affects both personal and professional development, stimulates creative ideas, enhances relationships, and strengthens multicultural understanding".

Consequently, through exchange programmes, "faculty and staff alike will experience firsthand different approaches to higher education, teaching styles, research, student services

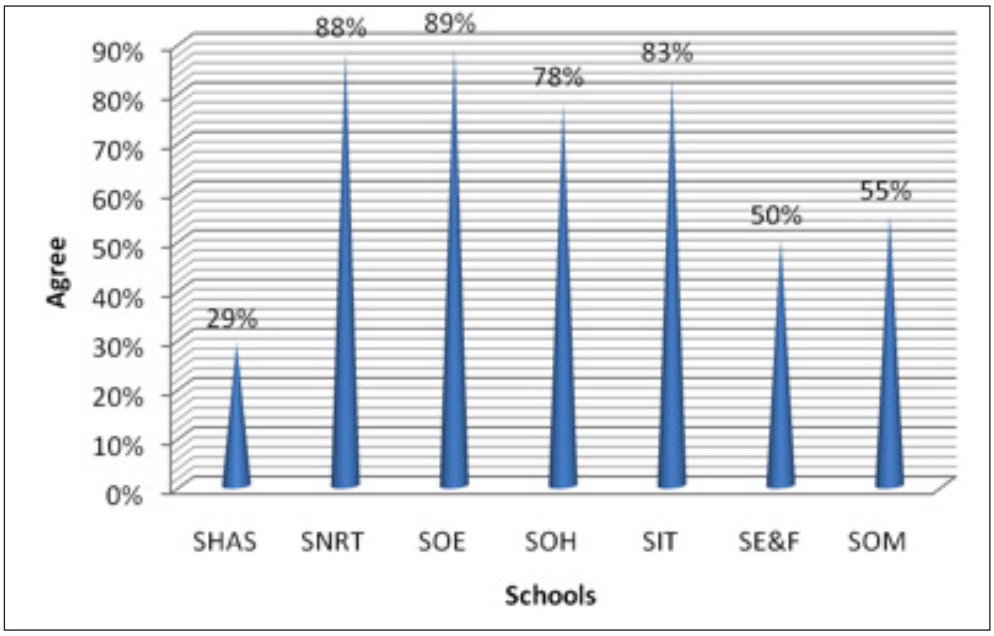
and support functions" (Towson University, 2012, p.1).

Impact of visiting scholars on PoN faculty

Another hypothesis made in this study is that the university authorities and the staff/students believe that visiting scholars make a significant impact on faculty in many ways. Interacting with new professional contacts offers a new perspective on the global academic standing of a faculty, its scholars and lecturers. PoN students will share in the benefit of faculty exchange, as lecturers integrate new views and material into their curriculums. Respondents in this study were thus asked to share their experiences on whether or not visits by international scholars and students to their departments had an impact on the faculty (see Figure 9).

According to Figure 9 below, most of the schools at the PoN agree that visiting researchers and teachers make an important contribution to the education and research at the institution. Over 70% of respondents in four schools (SOE, SNRT, SIT and SOH) and over 50% in two schools (SOM and SE&F agreed that visiting professors and students at the PoN make a positive contribution to helping the institution achieve increased internationalisation.

Figure 9: Positive impact of visiting professors/students on schools/department (yes/no)



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Typical contributions include giving presentations on their research topics, helping students and staff at PoN to become more active in the international academic environment by improving PoN staff access to international researchers and higher learning institutions (e.g. inviting them for conferences or sabbaticals), encouraging students to attend courses at other institutions, and facilitating colloquia that explore global pedagogical methods. Although a large number of respondents from almost all the schools appreciate the contribution of visiting scholars at the PoN, only 29% of respondents in the School of Health and Applied Sciences (SHAS) agreed with this. This unusual finding could be attributed to the fact that the SHAS is relatively new, having been established in 2009, and that to date few scholars

have visited the school.

Summary of findings

The main objective of this paper was to assess the status of the process of internationalisation at the PoN, particularly with regard to education, research and mobility levels of academic staff and students. The results obtained suggest a willingness to participate in this internationalisation of education, despite certain barriers that hamper efforts in most academic departments at the PoN to collaborate with international partners.

The initial hypothesis is that subsidy cuts by government have resulted in a lack of finance, and that this has been the main challenge in the internationalisation process at the PoN. However, other challenges have also been identified by respondents; these include a lack of infrastructure such as lack of offices and accommodation for visiting staff, a lack of senior academic staff with sufficiently high qualifications (i.e. the majority only have an undergraduate degree, rather than a postgraduate one), an excessive workloadwhich includes teaching large classes and supervising many research projects, the use of censorship by government, such as the promulgation of the Statistics Billin 2012, which requires researchers to sign a secrecy oath in order to access information. Not only do these challenges infringe on education but also on research activities in higher education institutions in Namibia. Further challenges faced by staff and students at the PoN are a lack of participation in academic exchange and a lack of opportunities to teach outside Namibia. On a practical level, the institution's internet connection has often been slow or unavailable, and this too has jeopardised networking with international partners, particularly via Skype.

Likewise, the name of the institution, viz. 'Polytechnic', does not correspond with its international status as a University of Science and Technology. This too has been a barrier to attracting senior academics from other countries, and thus the institution faces a serious shortage of senior academics, notwithstanding its shortage of local senior academics. Such a shortage of senior staff places an even heavier burden on existing academics and thus it is often difficult to release a staff member to teach at other institutions. The failure to participate in academic exchange and thelack of opportunities to teach outside Namibia not only has a negative impact on the process of internationalisation at the PoN, but has also hampered staff development at the institution.

Recommendations

Most of the challenges identified in this paper are related to external barriers and problems in the internationalisation process at the PoN. However, staff members themselves are supportive of the process. Therefore, it is crucial to ensure that all schools and departments take an active role in this process, from the planning stages of the action plan to its implementation. For this reason, the main recommendation of this study is that a proposed internationalisation plan should be included in the Polytechnic Strategic Plan Four (PSP4). This strategy would facilitate the planning, implementation, monitoring and evaluation of the internationalisation programme in the three main areas discussed in this paper, namely, education, research and mobility. It is also recommended that budgeting for international networking should improve to ensure that there are sufficient funds to pay for staff and student exchanges' with international higher education institutions.

Finally, it is recommended that another important area in the internationalisation process, viz. services, should be assessed. This aspect was not included in the scope of this study, but it is crucial to ensure that services such as Internet connections at the PoN are up to international standards and comparable to those of the partner institutions.

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APPENDIX A: SUMMARY

<table>
<tr><th colspan="3">SUMMARY OF FINDINGS</th></tr>
<tr><th>EDUCATION</th><th>RESEARCH</th><th>MOBILITY</th></tr>
<tr>
<td>• Infrastructure
• Lack of senior academic staff
• Workload
• Censorship by government, such as implementation of ‘Statistics Bill
• The name of the institution (viz. “polytechnic”)</td>
<td>• Infrastructure
• Lack of senior academic staff
• Workload
• Censorship by government, such as implementation of Statistics Bill
• The name of the institution (viz. “polytechnic”)</td>
<td>• Lack of opportunities to teach outside Namibia
• Heavy workload
• Shortage of staff</td>
</tr>
<tr><td colspan="3">RECOMMENDATIONS [why do have separate headings for Education, Research and Mobility, when you haven’t separate the recommendations accordingly?]</td></tr>
<tr><th>EDUCATION</th><th>RESEARCH</th><th>MOBILITY</th></tr>
<tr><td colspan="3">To include the internationalisationplan into the Institutional Strategic Plan Four (ISP 4) - see Appendix 6.2[check number?] with regard to facilitating the planning, implementation, monitoring and evaluation of the new plan.

Step 1:

Anchor the internationalisation of education:
• Identify the development goal (and how it will be reached)
• Identify the institutional capacity challenge(s)
• Consider the capacity-development objective(s)
• Identify the most appropriate knowledge

Step 2 Define the parameters:
• Identify the ideal participant profiles
• Consider the desired capacity outcomes

Step 3 Design and develop the internationalisation plan, implementation and M&E [what is M&E?]
• Select the participants
• Agree on the capacity objective and outcomes
• Assemble the knowledge exchange initiative (consider the operating constraints, select the knowledge exchange instrument(s), and select, sequence and design the activities)
• Plan the measurement of the results

Step 4Report the Results

Step 5 Implement the Knowledge Exchange [or should these be the other way around?]</td></tr>
</table>

APPENDIX B: INTERNATIONALISATION MODEL FOR PON

OBJECTIVES	APPROACH	STEPS
• Connect partners to new information and opportunities across countries and regions • Encourage innovation and the sharing of practical experience • Inspire collaboration between partner institutions • Develop practitioners through knowledge exchange • Facilitate new methods of capacity development • Be a resource for others who want to do development differently	• Identify & assess capacity development needs • Design &develop an appropriate international education initiative that responds to those needs • Implement the education initiative • Measure &report the results	*Step 1 Anchor the Internationalisation of Education*: • Identify the development goal (and how it will be reached) • Identify the institutional capacity challenge(s) • Consider the capacity-development objective(s) • Identify the most appropriate knowledge *Step 2 Define the parameters:* • Identify the ideal participant profiles • Consider the desired capacity outcomes *Step 3 Design and develop the internationalisation plan, implementation and M&E:* • Select the participants • Agree on the capacity objective and outcomes • Assemble the knowledge exchange initiative (consider the operating constraints, select the knowledge exchange instrument(s), and select, sequence and design the activities) • Plan the measurement of the results *Step 4 Implement the Knowledge Exchange* *Step 5 Report the Results*

Experiences and lessons learned
from a NUFU-sponsored North-South veterinary collaborative partnership

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Abstract
Department of Paraclinical Sciences was an equal partner in a research project on environmental toxicology and zoonotic diseases funded by the Norwegian Council for Higher Education's Programme for Development, Research and Education (NUFU) for two 5-year periods. The project commenced in 2002 with the main objectives of research collaboration and competence-building within these two areas. The NUFU Veterinary Network comprised six partner institutions in eastern (Uganda and Tanzania) and southern Africa (Mozambique, South Africa, Zambia and Zimbabwe) and the Norwegian School of Veterinary Science and National Veterinary Institute in Oslo, the northern partners. Successes included capacity building at the collaborating Faculties in Africa through post-graduate training of staff members and network building. One of the major successes was that the annual NUFU group meetings created a forum where Deans of Veterinary Faculties in southern and eastern Africa could establish contact and discuss various aspects of mutual interest and cooperation. This has lead to the establishment of a Regional Deans Group. In addition, senior scientists in the North and South acted as supervisors for the PhD students ensuring that each student had at least two supervisors for guidance and also promoted joint authorship of scientific publications. The NUFU-sponsored project also afforded members of staff the opportunity to interact and enticed collaboration on other research projects as well. Above and beyond academic collaboration, friendships have also been formed across national borders. One of the complexities to address when the environmental toxicology project commenced was that all the prospective PhD students as well as the senior researchers in the South were novices in this particular field. The first couple of months were spent to search for and study the relevant literature and a workshop was also organized to become more knowledgeable in this field. All the PhD candidates were members of staff of Veterinary Faculties in their home countries and had teaching commitments as well as other administrative duties to attend to, which impinged on their time to conduct research and perform other relevant activities. Communication was severely hampered and difficult at times when local networks were down and prevented effective electronic communication (e-mail). Other difficulties which hindered networking included information and communication technology (ICT) problems such as insufficient band-width. Another aspect not foreseen, when the project commenced, was the necessity to train technical staff for support.

The Department of Paraclinical Sciences was an equal partner in a research project on environmental toxicology and zoonotic diseases. The project was funded by the Norwegian Council for Higher Education's Programme for Development, Research, and Education (NUFU) for two 5-year periods. The project commenced in 2002 with the main objectives research collaboration and competence building within these two areas. The NUFU Veterinary Network comprised six partner institutions. Those partners were located in eastern Africa (Uganda and Tanzania), southern Africa (Mozambique, South Africa, Zambia and Zimbabwe), and in the Norwegian School of Veterinary Science and National Veterinary Institute in Oslo. Within these partnerships there were two research themes: *viz*. zoonotic diseases (diseases transmitted from animals to humans); and environmental toxicology (or

probably, more correctly ecotoxicology). The acronym "ZooTox" was coined to refer to these NUFU partnerships. A group coordinator was appointed for each group. The presenter (CB) was both a collaborator in the ecotoxicology group and the first group coordinator. Having two groups turned out to be an advantage. The arrangement stimulated friendly competition and good-natured rivalry between the two groups (e.g. comparing how many articles were published in each group).

To achieve the project's goal of capacity building, fellowships for doctoral students and research funds were provided. During the first phase, six students in each participating African country received fellowships. In the second phase four students received fellowships. Whenever possible, the following supervision model used: at least one senior researcher from Norway and one senior researcher from a South African country guided a doctoral student in their respective home country. Thus, the doctoral candidates received proper guidance and mentoring from experienced researchers. Additional students, not funded by NUFU, were also involved in the programme.

One of the major successes of the programme was capacity building at the collaborating veterinary faculties in Africa. This was done through post-graduate training of staff members and in-service training of other researchers. In this way, the primary objective of capacity building was achieved. To date, four candidates involved in the project have obtained PhDs. On the down side, a graduate from Uganda applied for and accepted a position in the United States of America. Such displacement is always a risk, and contributes to the so-called "brain-drain" in Africa. However, scientists that leave Africa might return in the future after gaining much needed skills and experience abroad.

Although ten fellowships were made available, seven students have graduated thus far, and the throughput rate is slow. This outcome can be explained by the fact that all PhD candidates were members of staff of the veterinary faculties in their home countries and had teaching commitments as well as other administrative duties to attend to; these duties impinged on their time to conduct research and perform other relevant activities. During the project one of the students in the Ecotoxicology group was appointed as dean at her faculty. Fortunately, this was a term appointment and she could resume her studies after a few years.

The ten years of collaborative research have resulted in a strong network within the veterinary faculties. The deans of veterinary faculties in southern and eastern Africa were invited to the annual, and later bi-annual, NUFU group meetings. One of the major achievements was that the meetings created a forum where the deans could establish contact and discuss various aspects of mutual interest and cooperation. This engagement has led to the establishment of a Regional Deans Group, and has paved the way for a united voice from southern and eastern Africa at international veterinary meetings such as at the World Organization for Animal Health (OIE), where issues such as harmonization of veterinary education and training are discussed. In addition, other academic collaborative agreements and memoranda of understanding have been signed between African veterinary faculties and schools.
The venue for annual, or bi-annual, NUFU meetings rotated between participating countries. This allowed all the participants to visit the member countries. It also exposed participants to specific difficulties and problems occurring in respective host countries. Another advantage of the meetings was that they allowed the group to brain storm and plan projects

together. In addition, the NUFU-sponsored project afforded academic members of staff the opportunity to interact, and enticed collaboration on other research projects. Flowing from this collaboration, research consortia were formed and grant applications were submitted to different funding bodies. Above and beyond academic collaboration, NUFU meetings have led to friendships being formed across national borders.

As senior scientists in the North and South acted as supervisors for PhD students, joint authorship of scientific publications was promoted. To date, more than 45 scientific, peer-reviewed articles have been published as a result of the NUFU project. On the other hand, the non-scientific dissemination of research results in the lay press, and as popular articles, has not received necessary attention.

One of the complexities to address when the ecotoxicology project commenced was that all the prospective PhD students, as well as the senior researchers in the South, were novices in the field of persistent organic pollutants (POP's), endocrine disruptors, and evaluation of biomarkers such as induction of cytochrome P-450 (CYP) activity. The first couple of months of the project were spent to search for and study relevant literature. In addition, a workshop was organized in order to become more knowledgeable of the above fields. The literature review and workshop introduced many of the collaborators to this area of research, and exposed all the African participants to new fields, which have become very important areas of research in the discipline of toxicology.
One mistake that was made in the project was that after the first phase of research, attention shifted to cyanobacterial research. This set the Ecotoxicology group back when compared to the Zoonosis group. In addition, it appears that research collaboration occurred mostly between individual countries in the South and Norway, rather than amongst southern African countries. This could be due to poor infrastructure and laboratory facilities in the South, and far better equipped research laboratories in Norway. The distance between laboratories in the South also hampered collaboration.

Communication was severely hampered and difficult at times when local networks were down. This disconnection prevented effective electronic communication (e.g. e-mail). Other difficulties, which hindered networking, included information and communication technology (ICT) problems. These challenges included a lack of band-width and on-line access to published research articles. Group coordinators attempted to establish regular feedback and progress reporting via e-mail, but this was not well supported. The project coordinator in the North also created an internet platform in "Project Place". The idea was that this site would be used as a communication page for the NUFU ZooTox 2007-2011 project. However, this aspect of the project was poorly supported. Taking the apathy amongst participants into consideration, in retrospect it was a good idea to budget for annual or bi-annual meetings. Besides the other advantages flowing from these regular meetings as described above, the meetings also forced researchers to complete aspects in their specific projects, as all the post-graduate students were required to present progress reports at the meeting. It also instilled enthusiasm for the project, and kept everyone motivated.

A problem that was experienced relates to funding. As they say: '*money is the root of all evil*'. It appears that the money, and not the science, was the most important aspect for some collaborators, although they were in the minority. Another aspect that was unforeseen

when the project commenced was the necessity to train technical staff for support. Further, it is possible that better progress could have been made if post-doctoral fellowships were included in the initial budget.

Conclusions

The progress after the first 5-year period must have been viewed positively by NUFU. The programme was sponsored for another five years. Now, after the second 5-year term, the challenge is to keep the NUFU network together, and procure grants from other sources. From a South African perspective this ongoing research collaboration is extremely important. As South African scientists were often excluded from such projects we were now invited back in the post-apartheid period.

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Personalising collaborative structures: learning from experiences

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ABSTRACT
In their review of the relationships between African higher education institutions and their international partners, Samoff and Carrol (2004) point to a lack of innovation when it comes to the ways in which knowledge and ideas are produced and exchanged within North-South collaborations. They allude to dominating perspectives which have tended to shape the models adopted within these partnerships. This paper examines some of the experiences of students and staff participating in such programmes of exchange, and these experiences raise questions about the inclusiveness of the assumptions and practices that organise higher education linkages. It is argued here that relying exclusively upon formalised or depersonalised structures for managing academic exchanges tends to result in unequal access to resources and learning opportunities for the participants from both the north and south. On the other hand, the participants' experiences highlight the value of interpersonal relationships in overcoming the technical and cultural difficulties which are common in such diverse arenas. This interpretation highlights the potential of the relational elements of some epistemological backgrounds for contributing knowledge and understanding to partnership models. The paper thus recommends a greater emphasis on structures that are informed by local and personal knowledge, for example mentorships, since such low-level co-operations may be less constrained by the power relations that shape considerations at an institutional level.

The point of departure for this paper is the view that international collaborations in higher education are based on assumptions about knowledge that show we are still suffering from what de Sousa Santos, Nunes and Meneses (2007, p.xxxiii) describe as "the burden of an epistemic monoculture". Even in our North-South exchanges we value only that knowledge which has currency in a global knowledge economy that perpetuates inequalities between the global north and south. As a result, our collaborative arrangements not only fail to achieve their professed aims of "capacity building", "development", mutual exchange, and so forth, they are destined to reproduce structures that undermine the achievement of these goals. As Samoff and Carrol (2004) argue, the rational-technical orientation introduced by powerful interest groups in the higher education arena tends to lead to "the homogenization of perspective and the adoption of universal verities" (p.106) that undermine local roles and understandings.

In fact, extensive and bitter experiences of North-South development projects, both generally and within higher education, demonstrate unequivocally that any project, and especially one involving learning, cannot be imposed or transferred. Instead it needs to be generated within the context of its application. Furthermore, Mason (2008) suggests that modesty would teach us to favour partnerships with scepticism, as opposed to an unerring faith in best practices and universal truths. Subscribing to such tenets, this paper attempts to outline ways in which low-level collaborative practices can be employed to inform higher-level structures and populate them with people and ideas originating from a variety of contexts. Thus, extending this focus to higher education more generally, the paper agrees with Koehn

and Demment (2010, p.3) that:

> "To participate fruitfully in today's interdependent worlds of scientific research and development-project activity will require active engagement by African university personnel in collaborations that cross disciplinary, institutional, knowledge-system, and nation-state boundaries."

However, in crossing these boundaries, it is to the personal component of collaborative activities that needs to be more closely considered when structuring partnerships in higher education. Such an approach is intended to counter, or balance, the top-down modes of organisation engendered by state intervention, the dynamics of funding, and the general neoliberal climate driving the "knowledge economies" of which higher education institutions are key. Fortunately, the value of personally, as opposed to centrally, co-ordinated modes of organisation is not without support. This is demonstrated by Huisman, Witte and File's (2006, p.11) report on higher education governance reform within Europe; they note:

> "While governance arrangements usually emphasise formal structure, bodies and decision-making structures, the governance of higher education institutions is still strongly influenced by informal networks, collegial agreements and more process-oriented decision-making structures (Gornitzka, Kogan and Amaral, 2005)... Since teaching, research and knowledge transfer are dependent on the academic staff, a key issue of governance is to create institutional conditions stimulating the creativity of the professionals (EU, 2005). Governance is, in this perspective, about identifying the institutional structures and processes that create optimal conditions for staff performance."

With the above in mind, this paper offers an examination of students' inter-personal experiences of learning in order to showcase the potential of a grassroots approach for developing collaborative structures. The paper identifies mentorships as a means for accomplishing paradigms that incorporate local and personal knowledge in an empowering way. It proposes a relational framework for achieving this, thereby recognising a wider definition of valuable knowledge for international learning exchanges.

The paper thus begins by discussing interview data generated from an investigation of students' experiences of the international master's programmes which they attended. The discussion and some of its inferences are then linked to an exploration of the potential of mentorships for building on such experiences to strengthen the networks and structures involving international partners in higher education.

An investigation into student experiences

The empirical basis for the main arguments presented in this paper stem from a series of semi-structured interviews that were conducted over a three year period, from 2009 to 2012. These students are, or had been, part of two international master's programmes at the Oslo and Akershus University College of Applied Sciences. These programmes were initiated in 1998 with the view that, as Professor Anders Breidlid explains, "education is the most important tool for development, broadly defined, in the south" (private interview, 2012).

Today it is run primarily by the Department of International Studies and Interpreting at the college; according to the programme's course outline, it "aims at offering an advanced study programme which provides necessary competence for work in the Norwegian multicultural schools as well as for international work within the education sector in the South" (HiOA, 2012).

The master's programmes have an international student exchange component and recruit students mainly from Norway, Sudan, Zambia, Ghana and South Africa, as well as from Lithuania, Russia, Iran, Afghanistan, Bangladesh, and Nepal, amongst other countries.

The interviews took the form of two focus group discussions involving eight and six students respectively; plus 15 individual interviews. All of the interviews were digitally recorded, and the individual interviews were conducted either face to face or telephonically. The participants were asked to reflect on their overall impressions of studying on the programme with the main focus being on: their experiences as local Norwegian students in an internationally diverse study environment; or as international, non-Norwegian students studying in an international environment away from home.

The paper also benefits from interviews with academic staff. Firstly, Professor Anders Breidlid who was instrumental in starting and running the masters programmes. Secondly, Professor David Stephens, an internationally active academic who worked on the MIE master's programme for several years.

The main findings of the investigation indicate that a significant proportion of effective exchanges, necessary for being or becoming an international student, were facilitated when a greater degree of personal or interpersonal contact was involved. Especially if that contact extended into the formal structures set up by the institutions.

Personal relationships and local knowledge in psychosocial support

This paper contends that formal structures such as those operating within higher education institutions, although necessary, tend to be rigid. They are generally designed to cater for a fairly homogenous group, which is exactly what international students are not. Therefore such structures are less than efficient at responding to the diverse situations and needs brought about by inter-university exchange. However, this research reveals that institutions can benefit from the ad hoc arrangements that international students are often required to make in order to overcome systemic oversights. This kind of inefficiency on the part of formal arrangements, or perhaps the greater effectiveness of more personal ones, are clearly evident from some of the students' first experiences in the new country. Andile, for example, explains his first encounter with Norway:

> "The first day I arrived there I was lost! […] completely! [...] I struggled to find the res (student accommodation). And when I called the number I was given, there was no response. I started calling that number at the airport because there was no one who came to pick me up … The sound of the phone was like it was engaged, you know? It was not like the tone that we are familiar with here in South Africa. I tried again and again. When I got to the city I found a telephone and called again, but it was the same thing. Then I decided to call Bheki[1] because he was still there. So Bheki

1 Bheki was also one of the international students on the master's programme, and is also a participant in this study.

> was the one who gave me the directions, you know, to reach the residence ... He is the person who taught me so many things, especially when I wanted to move from one place to another ... There was another guy from Sudan … James. Whenever Bheki was busy then James would go with us and show us the places. And at school, before we started classes there were excursions, so these also helped us to know the place better." (Andile, interview, 2012).

At one level, Andile's account demonstrates the disorientation of an individual in a foreign environment. At another level, it alerts us to our dependency on networks that are rich in local knowledge, especially of the unfamiliar situations which we may face. Whether as researchers at a foreign institution, or new members to a partnership arrangement, until we receive some orientation we are bound to feel not only lost but also quite useless. Like Andile, newcomers into any arena need to seek out relationships that can provide them with both the knowledge and the psychosocial support necessary for them to perform effectively.

Consider, for example, Jasim's experience of the same situation. The notable difference in this account is of having a facilitating relationship in place, in the form of the person-to-person early assistance of a Study Buddy:

> "One of the interesting things right from the day of my arrival was this programme of Study Buddy. I was very lucky to get one who received me right from the airport. That gentleman gave me a quite adequate orientation to Oslo as a whole. He made me feel at home! That continued until I was quite knowledgeable with most parts of Oslo." (Jasim, interview, 2012)

Jasim also recalls how his Study Buddy took him from the airport to the student housing office to collect his keys, and then went with him to show him how to use the various facilities at his student residence. The Study Buddy then took Jasim to buy basic utensils and groceries at various inexpensive shops in Oslo. On the following day, he assisted him with converting his money into local currency:

> "Any day I needed some help I just gave him a call and he would come around. And then I'd make enquiries or ask him to go with me to get a particular item which I needed. That was actually so very useful to me, and I think afterward I realised that I was more knowledgeable of Oslo than most of my colleagues because I found myself taking almost automatically a leadership role." (Jasim, interview, 2012)

Jasim's experience highlights several interesting aspects of initial encounters, particularly between differently resourced individuals; this can be extended to mentorship and larger scale relationships as well. Firstly, the combination of professionalism and personal interaction assigns clear roles to the participants. This appears to minimise the sense of dependency that characterises Andile's early informal partnering with his colleagues. Secondly, Jasim's arrangement was not an indefinite one; he is aware that when it terminated it left him with knowledge which now makes him feel like a resource to his colleagues.

Since this refers to personal, unquantifiable qualities, it is easy to underestimate their

significance. Yet, from conversations with Gavin, a student from Ghana, it is clear that these initial encounters may build or compromise a student's confidence and consequently also the way she or he interacts in the classroom. Gavin explained how his first days outside in Oslo were filled with learning a host of completely new technological procedures for dealing with his studies. While the courses and workshops on academic writing, the library system, the electronic classroom, and so forth, were professional and thorough, he missed the personal contact that could have assured him that some of his confusion from this information overload was to be expected and was also shared by others. Gavin gives the impression that those with whom he could engage during that initial vulnerable period greatly influenced his later attitudes and relationships. Unfortunately, it appears that it was generally only his colleagues from the south who initially showed a personal interest in his well-being. That some of his northern classmates did not offer to assist the newcomers, despite being familiar with the system and the information technology, only seemed to alienate Gavin further. Based on the comparisons he draws between the realities of his home and host academic environments, it is clear that this student perceives his role in the North-South partnership as one of acquiring rather than sharing knowledge, skills and resources. He appears not to see himself as having something to offer; this impression is further crystallised by what appears to be a lack of interest from his northern colleagues.

On the other hand, for Donna it was a local Norwegian student, Aksel, who "took me under his wing and showed me how the train system works and all that sort of stuff. He was really welcoming and really helpful," (Donna, interview, 2012). That these students continue to correspond from their home countries is perhaps indicative of the bond-building potential of these encounters. Later it will be shown that these early interactions can be analysed in terms of appropriate engaging behaviours, which can set the tone for how collaborative relationships develop and endure.

The above situations illustrate the value that local knowledge has in international collaborations; as well as its potential for giving the holder a role to play in smoothing another's transition into an unfamiliar context, a key feature of mentoring. As will be argued below, these early opportunities to establish meaningful contact with others who share the academic environment may sow the seeds for further, larger scale partnerships. For instance, several students mention that in evaluating the success of the programme, especially in light of its aims of North-South development, one has to consider how it lives beyond the designated two years of organised classes and supervision. Thandi, for example, is looking for continuity and support especially for those students who do not complete within the allotted time. She feels that some tracking of the students is needed. Similarly, Donna considers the test of the programme's value to be in the networks and resources that it can establish for its students in their future engagements. She therefore feels that the college and its partners did not do enough to promote academic and professional collaboration among its students "going forward" beyond the masters' programmes themselves. She notes, however, that as classmates, the students were able to form enriching personal relationships and hopes that these may lead to future exchanges and networks.

Furthermore, a close relationship that is based on more than a professional acquaintance allows for collaborations that are more forthright and honest and, as a result, more constructive; at least according to one of the professors who had worked at the programme:

> "It is only after three or four years, when you start to know people, that they will start being critical." (David Stephens, interview, 2012)

As in any partnership, until there is space for genuine interaction, the exchanges tend to remain shallow and do not develop because they are based on superficial or false premises. David Stephens suggests that there are multiple agendas operating within collaborative arrangements, including national, institutional, and individual agendas; this implies that the success of collaborative arrangements depends on the extent to which these agendas are shared or aligned in a productive manner. It is then helpful to bear in mind the controlling role of the mentoring party (perhaps the leadership), who would serve "as an agent of induction" (Cullingford 2006, p.3). However, this role is also balanced with ones of support and mutual learning, which are identifiable from the students' reported interactions with each other and the college.

Personal relationships and local knowledge in technical support

Many students from the south experienced situations where they not only had more difficulty than local students in accessing resources, sometimes the available structures /organisation created obstacles for them.

Nina explains a situation where the foreign students from the south had difficulty printing out course materials because they didn't have the correct type of bank account to electronically refill their printing quota:

> "A few of the international students said it had been a problem for about a week, where they had tried to speak to someone at the faculty; to someone at *studenttorget* (student information); I think one had been at the international office […]and everyone was sort of saying "We can't help you." So in the end we went down to the examinations office / information area, and the lady there was very engaged with the whole issue. So she e-mailed IT and she was calling and e-mailing people … she was very helpful." (Nina, interview, 2011)

Also Olivia, who is from Europe, and who was extremely impressed by the attitudes and personal efforts of university staff, was frustrated by bureaucratic procedures:

> "First this damn Norwegian id number I've been waiting for pretty long ... then this damn tax card! I cannot work and that is going to be an issue because I have saved some money but that will soon run out… I don't think that it's the work of the university. But maybe the university can figure out who is the person in charge of this to be able to call when there is a problem like this ... but that might be difficult." (Olivia, interview, 2009)

In the above cases the students show little expectation that their situations will be resolved by the formal channels available at the institution. Instead they make use of personal contacts or are resigned to letting the system run its course. This sentiment is captured clearly by Daniella, discussing language and access to information at the college, when she concludes:

> "From my experience, the student cannot change the formal structures. Of course there is something that we like and some things we don't, but usually the students adapt themselves because it's very risky to go against the system." (Daniella, interview, 2009)

In one of the focus group discussions from 2009, there seemed to be a similar acceptance of the inability to negotiate with institutional structures about those unique situations experienced by foreign students:

> Student 1: Usually is like that. When we come here, when international students come here, they have to conform to the society they find themselves in. They don't take into consideration where you are coming from, they just say, "This is what is done here, so you conform or perish." They say here we do it this way, the Oslo way.
>
> Interviewer: Has that been your experience?
>
> Student 1: Yes, yes. "Here we don't accept written things, its electronic and it's done in this way so you have to do it the way we do it here." That is the definition of 'international' – doing what you find where you go.
>
> Student 2: But that is typical Norwegian culture in a way. From a school perspective we say that you come to our country so you have to adapt. We will bend our rules a bit but in the end you are here so you have to do the way we are doing.

What does this mean for international students, and especially for those coming from countries and educational systems judged to be less modern (and therefore less "developed")? Can they help to point out shortcomings in the host systems and assist in developing alternatives, or do they simply "conform or perish"?

This function of the students, as stakeholders with first-hand experience of the everyday realities of collaborative programmes, is key to the bottom-up approach to building structures for partnering. Consequently, it is the contention of this paper that it is through mentorships that these shared personal experiences can be filtered into the formal structures of partnering higher education institutions. However, if this is to be realised, such experiences have to be acknowledged as having value, and this also presents a challenge to the academically oriented higher education institutions.

Academic vs. non-academic knowledge

> "I think also many things that we take from here, they are like […] a little bit untouchable. It's unconscious. We take it with us, but we cannot say it is that skill or something. But it is one hundred per cent that we are more rich than when we came here!" (Daniella, interview, 2009)

It was common for virtually all the students interviewed to express the sentiment of having been enriched by their interactions within the multicultural and international learning environment. However, like Daniella, most of them could not give a clear account of what this enrichment entailed in terms of their learning. Thus, students could readily identify the

acquisition of academic writing skills, theoretical concepts, critical reading, and analytical strategies, alongside other forms of academic knowledge and skills; however, knowledge that is not part of conventional formal learning at higher education institutions was more difficult for them to identify.

It is likely that this is as a result of the way higher education institutions favour propositional knowledge and technical, academic, or professional skills as opposed to learning as a social experience that affects the whole person. As Hodkinson, Biesta and James remind us:

> "Learning is often seen as primarily concerned with cognition. Such approaches risk downplaying the emotional and especially the physical/practical dimensions of learning in all situations. This work often implicitly accepts a Cartesian separation of body and mind, and fails to understand that the physical, practical, emotional and cognitive aspects of learning are each parts of the others." (2008, p.31)

This contrast between a holistic and a segmented approach to knowledge is also how proponents of indigenous knowledge, or feminist epistemologies, characterise their ways of knowing in relation to the dominant western epistemology. It is therefore not surprising that the students' responses reflect how these social and embodied aspects of learning remain under-communicated by even the exchange programmes which focus on multicultural and international education.

> "Yes, the cultural learning part was definitely there, and that's something I'll value for the rest of my life … Like I became really friendly with a lot of the girls from Sudan and that was a really enriching thing for me, to just learn how other people lived and the things they had to go through [...] that was amazing and incredibly unique, *but I would have liked it to be more academically enriching*." (Donna, interview, 2012; my emphasis)

Donna explains that while most of her classmates drew on personal and professional experience, they were not able to engage in deep academic debates around the theoretical concepts. Interestingly, her frustration over the primarily anecdotal reflections of her classmates, contrasts with their ready appreciation of how theoretical concepts seem to capture their lived experiences of development, discrimination, educational challenges, and so forth. Nearly all of the African students interviewed mentioned specific technical and academic concepts or skills as part of the valuable learning they had acquired from their participation in the exchange. Conversely, none suggested the possibility that their own unique knowledge, experiences, behaviours, perceptions and expressions that make up their "linguistic and cultural-historical repertoires" (Guiterrez and Rogoff, 2003) may have contributed in a similar way to their fellow students' development.

Overall, it seems that students are confident about the usefulness of conventional, formal academic knowledge, but seem less aware or appreciative of the impact of other forms of learning which they are undergoing. Perhaps significantly, it is two Norwegian students, Laila and Greta, who seem to be the exceptions to this rule. Laila, for example, recalls initially feeling cheated after receiving some teaching that she felt was of a dubious quality while abroad, but insists that after some reflection "you see all the other things you learned

and then you realise that you have learned so much more by being there … but just different things," (Laila, interview, 2012).

When she was asked about the use-value of this non-academic component of her learning, Laila is able to be concrete:

> "I think I'm meeting people from a different cultural background in a different way than I did before I had this experience … I'm more open to difference ... I have been looking at jobs and I see that the jobs that I'm interested in very often they value what they call "*tverkulturel*"? … multicultural competence, and I think I can say that I have that more now than before … I'm very interested in working with children still, and trying to increase *their* multicultural competence is something that I think is very important as well. And I think if I hadn't experienced this kind of transformation within myself, then I wouldn't have the same possibility to actually try and teach others, or get others to experience this." (Laila, interview, 2012)

Similarly, Greta acknowledges how her learning was taken to another level during the personal discussions with her classmates at social gatherings and during visits at their student accommodation:

> "I don't think I could have found places to read about those things. I don't think any lecturer would emphasise all these small to major things they were talking about. And to make it so real, and not just something you theorise about." (Greta, interview, 2012)

Greta's reflections on her experiences during the Sudanese[2] and Zambian components of the exchange programme seem to resonate with the experiences of some students from the now well-known South African University of the Free State Leadership for Change programme[3]. According to one newspaper reporter, at least a few of the participants in that exposure programme also assessed their unstructured learning opportunities as the most significant aspects of their experience:

> "For some, the free, unregulated time they spent with their peers and informal visits, such as one to a poor school, were more meaningful than the formal sessions. They spoke of lessons learnt from sharing bedrooms with someone of a different race, of personal experiences exchanged during free times, of needing each other when getting lost together in a foreign city." (John, 2011)

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2 Their visits took place prior to the independence of South Sudan when the country existed only as Sudan.

3 The University of the Free State Leadership for Change programme was one of several measures addressing "racial stereotyping, fears and concerns through guided exposure to cross-cultural environments". The first stage of the programme sees 150 first-year students visiting universities in the United States, Europe and Japan; they participate in "learning events in collaboration with the hosting institution, including social, cultural and academic and leadership training events". The second stage of the Leadership for Change programme starts when those who have experienced the exchange then mentor newly arrived first-year students, develop leadership programmes for them and run volunteer programmes at the university,

That these students did not feel confident about expressing these sentiments to the university staff, or about articulating their preference to work outside of traditional leadership roles and formal structures, is a significant comment on the single-mindedness of higher education approaches to learning and organisation.

Inferences from the student experiences

The above student experiences are intended to illustrate and challenge the predominance of formal modes of organisation that operate on the international exchange programmes in question, and arguably across international exchange programmes generally. There are a number of significant inferences that can be made with regard to the students' experiences within this North-South partnership arrangement, one of which is that early experiences are formative. The networks established during initial encounters can fundamentally affect whether some students view themselves as resourceful or as requiring resources. In addition, there are differences in students' abilities to access and negotiate the structures; in some instances this presents significant challenges to the students' functioning within the system. However, challenges relating to the inflexibility of institutional systems may be more effectively overcome by adding a personal element. Furthermore, the reported experiences imply the involvement of a range of emotions, including confidence, trust, friendship, and so forth, yet these are not explicitly recognised as useful outcomes of the programme.

In the previous sections, the paper has attempted to show how students' experiences of North-South collaborative arrangements can be improved with the introduction or enhancement of the personal element to their encounters. The paper now argues for mentorships as a vehicle for building this personal, relational element into the structures that serve these collaborations.

It's personal: mentorships

> "If the lecturers don't have time to introduce the tools or skill for the international students, maybe they could have encouraged the Norwegian students to do it .., or maybe just have this... er… just to take care of one person. Just the first couple of weeks and make sure that they have everything set." (Greta, interview, 2012)

Definitions of mentorship generally point to a relationship between more experienced *mentors* and less experienced *mentees*; the former guide and support the latter in their socialisation into the culture and practices of a specific institution. According to Ragins and Kram (2007) the distinguishing feature of mentorships is "that mentoring is a developmental relationship embedded within a career context [where] the primary focus is on career development and growth," (p.5). For Dietz, Jansen and Wadee (2006) mentors in an academic context serve as "go-betweens" that facilitate the adaptation of new recruits to the sometimes harsh higher learning environment. Similarly, Williams and Purcell (2010, p.1) point out that mentorship is generally understood as a relationship that aims at enabling "a smooth transition into academic life". Mentoring is thus understood as having career and a psychosocial functions (Ragins and Kram, 2007), with the benefits accruing to both parties. This is alluded to by Darwin and Palmer (2009, p.125) when they refer to mentoring in higher education as "a process of influencing and fostering the intellectual development of students and career aspirations of staff".

This is consistent with Ehrich, Hansford and Tennent's (2004) findings from a review of the literature on mentoring which showed that for mentees the most reported positive outcomes of mentoring "related to support, empathy, encouragement, counselling and friendship," (p.523). Benefits concerned with practical skills, resources, content, and so forth, were cited less frequently; contact and discussion being the third and feedback through critique the fourth most reported benefits. These finding can be interpreted as showing that it was psychosocial aspects of the mentees' development that were most highly regarded. This can be correlated to the student experiences which demonstrated that non-academic elements of their exchange experiences were not really considered to be as important as acquiring relevant theoretical concepts and practical or technical skills. However, a mentoring arrangement would attempt to draw from the knowledge and skills that the students accumulate through their interactions – "the transformation within myself" (Laila) – thereby providing a forum for making them explicit and valorising them. In this way they may eventually come to inform participants and programmes concerned with developing partnership arrangements.

With regard to benefits reported for mentors, the findings from a study by Ehrich et al. (2004) identify that collegiality and networking are most prized. In addition to the benefits of sharing ideas with others, mentoring also seems to enhance the reflective process for mentors by offering them opportunities to re-evaluate their ideas and practices. The third most recognised positive outcome for mentors was that they had developed professionally as a result of their mentoring; which perhaps could account for the fourth outcome of greater personal satisfaction or growth. In the view of this paper, such outcomes constitute the ideal ingredients for a bottom-up approach to building or strengthening partnership structures. They imply that the participants in similar group-learning or knowledge sharing projects would be able to identify valuable outcomes for themselves, even if they are the more experienced and resourced members within the situation, thereby offering an incentive for sustained or greater involvement in the alliance.

Therefore it is clear from the student experiences how these career and psychosocial functions operate, or are relevant, at an individual level. Moreover, what is suggested here is that this kind of development relationship can also function at the level of institutional partnering. Not only researchers, but teams of researchers, or departments, or programme coordinators, assist each other in developing a thorough understanding of the context and practices at each other's places of work. This implies, of course, a slightly different definition of mentorship than the traditional one with which we are most familiar.

Thus, while it is generally agreed that mentoring addresses the intellectual and emotional challenges faced by newcomers to an institution, the form or organisation that this arrangement should take is less clear. For instance, in addition to a traditional one-to-one, dyadic model of mentorship, the arrangement may also engage groups of individuals. In their article Darwin and Palmer (2009) explore a group mentoring model in the form of mentoring circles; these "typically involve one mentor working with a group of mentees or groups of people mentoring each other," (p.126). The mentoring circles which they studied at the University of Adelaide, for example, consisted of six or eight junior and senior staff members with varying degrees of experience, and a coordinator. The authors start out by noting that mentoring circles are reported to provide greater connectivity, increased confidence and

access to networks, amongst other benefits. They further state: "As a peer-mentoring model, mentoring circles offer participants flexibility, diversity, knowledge creation, the ability to depend on more than one person and a system-wide view of the organisation," (p.127). Surely these are valuable resources for groups running collaborative programmes. Furthermore, with regard to the organisations involved, mentoring circles "offer potential for sharing knowledge and engendering a diversity of opinion, expertise and relationship building," (ibid). Darwin and Palmer go on to conclude from their investigation at the university that "group mentoring models facilitate interaction between different departments and provide greater opportunities to develop relationships," (2009, p.134).

For those who subscribe to Paulo Freire's vision of a revolutionary pedagogy where development is a process of humanisation through dialogue, the mentoring circles are reminiscent of his "culture circles", of which he has the following to say: "In the culture circles we attempted through group debate either to clarify situations or to seek action arising from that clarification," (Freire, 1974, p.42). The importance of dialogue and empowerment in North-South collaborations further underlines the potential of the circles.

Williams, Scandura and Gavin (2009) take a more organisationally oriented approach when they consider the merits of a type of mentoring circle referred to as "team-level mentoring"; this involves leader/team interactions that aim at developing the team. Their study points to the way that team functioning can be enhanced by the manner in which leaders share information and promote the organisation's goals through mentoring in the team context.

Ragins and Kram in their *Handbook of Mentoring at Work,* note contributions from a similar perspective which investigate how mentoring has helped women advance beyond the glass ceiling, and been incorporated into programmes for developing leadership. These authors express quite succinctly the main thrust of this paper when they claim: "First, leaders can model and create a developmental culture that promotes mentoring relationships, and, second, mentoring can build leadership capability within individuals and within the organisational context," (Kram and Ragins, 2007, p.679).

That is not to say that mentoring is without its challenges. The relationship encompasses issues of knowledge and power (Darwin and Palmer, 2009; Jones, 2006); it is vulnerable to miscommunication and misinterpretation (Dietz, Jansen and Wadee, 2006); and demands commitment but offers little incentive in a competitive academic context where time is often jealously guarded (Ehrich, Hansford and Tennet, 2004). However, in the opinion of this paper, these challenges point to precisely why mentoring is important, especially in the context of North-South partnerships. If we are serious about not simply producing elites who are out of touch with the communities they profess to serve, if we are convinced about the necessity for including a diversity of perspectives in an equitable way, and if we are prepared to try something different, then these challenges also become the stimuli for change at our higher education institutions and within the partnerships we embrace.

These challenges also alert us to the need for a thorough understanding of mentorships if we are to successfully negotiate these delicate relationships. Obviously, such a task is well beyond the scope of this or any other paper; thus, only the briefest of outlines will be provided to indicate the theoretical framing espoused by this paper.

A relational perspective on building partnerships

By viewing mentorships through a relational lens it is possible to argue that better partnership structures can be built between and within higher education institutions. The relational perception of mentoring lies within the social network theoretical framework, which can be no more than hinted at with the following definition:

> "Social network analysis takes as its starting point the premise that social life is created primarily and most importantly by relations and the patterns formed by these relations." (Marin and Wellman, 2010, p.1)

Thus, broadly speaking, a social network perspective locates the causes and outcomes of behaviour in the nature of social relationships and how one is positioned within them. This allows us to consider mentoring in terms of the nature of the relationships between variously placed individuals and groups within a network. Following such an approach Higgins, Chandler and Kram (2006) have advanced the concept of relational engagement to explain how participants in mentoring relationships initiate the developmental relationships of their developmental networks.

In order to show the significance of this, however, it is necessary to briefly clarify, firstly, that a *developmental network* is "a group of people who take an interest in and action to advance a focal individual's career," (Higgins, Chandler and Kram, 2006, p.4). However, for our purposes it is possible to move beyond this "egocentric" perception to include also focal groups or institutions; as well as extending the concept of "career" to more general goals, such as those of capacity building or collaboration generally. Secondly, Higgins et al. (2006, p.1) define *relational engagement* as "a set of behaviours that characterise the protégé in the initiation of the relationships—formal and informal—that comprise his or her developmental network."

How this is significant to mentorships, and thus collaborative networks more broadly, is evident if we accept that it is during the initiating phase of the mentorship that "an entrenched degree of mutuality, trust and interpersonal comfort" (Higgins et al., 2006, p.8) is established which determines the later development of the relationship. This corresponds with this paper's earlier observations that suggest that the critical exchange necessary for a sustainable collaboration firstly requires the elements of trust and respect. Unfortunately, as argued above, these emotional or psychosocial aspects of interaction within academia are often disregarded and left to chance. A relational perspective, on the other hand, gives us tools with which to understand and perhaps manipulate these elements. As Higgins et al. propose, organisations could develop programs that help participants to describe relationally engaging behaviours and their impacts for the purpose of enhancing developmental relationships.

Conclusion

This paper has proceeded from an empirical to a theoretical basis in advocating the personalising of structures governing collaborative arrangements between higher education institutions. Pointing to the way that personal relations facilitate knowledge making, and also recognising a wider range of knowledge and learning opportunities, the paper has suggested that mentorship arrangements, and mentoring circles in particular, have the

capacity for elevating the status of these personal elements within the formal structures of partnerships. Somewhat paradoxically, a network analysis is proposed for theoretically examining the potential that mentorships may have for translating interpersonal relations into organisational development

When we ignore or undervalue the personal and relational elements of knowledge exchanges our "development" efforts in the field of education may simply serve to maintain the status quo that is contingent upon the endorsement of particular forms of knowledge and knowledge resources in the north and south. We at higher education institutions should be especially wary of contributing to the formation of elites who end up beyond the reach of the layperson who believes that academic knowledge conveyed through formal academic institutions is all that is on offer. Mentorships present a possible path away from this pattern of "development".

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An evaluation of the music, education, and cultural identity project (MECI)

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Abstract
This paper critically examines the extent to which the University of Botswana has positioned itself for the achievement of its ambitious vision of being *a leading centre of academic excellence in Africa and the world* through the development of international partnerships with universities in Africa and other regions. The paper looks at the university governance, that is, the structures, policies, processes and mechanisms that are in place in order to achieve excellence in the area. In particular, the paper evaluates the impact of the North-South-South (now Music, Education and Cultural Identity [MECI]) programme that was initiated in 2007 between Juvaskjular University in Finland and some universities in Southern Africa of which The University of Botswana is part. The paper investigates how capable the University of Botswana is to make the project a success. Since the advent of the globalisation syndrome, most universities have developed structures, policies and strategies to guide them respond effectively, but the question is how universities have built the institutional capacity for participation in international knowledge networks. The paper also interrogates similar ventures internationally to establish trends. A combined mixed-method research approach will be used to gather data for this study. A sample of staff from the international office, managers, faculty and students involved in the project were interviewed for insights into how they built capacity for effective governance – what they thought it was, how they thought it could best be achieved and why they thought it was important. An open-ended questionnaire was also utilised to elicit more opinions from the participants.

As an institution, the university has always been regarded as international, even though there have been debates as to how far true this perspective is (Scott 1998; van der Wende 2002; Beerkerns 2004). This international outlook of universities has persisted, especially given the advent of globalisation and the fading of national borders. However, it has been argued that the nature and scope of the internationalisation of higher education have taken on different complexions depending on many variables, such as politics, economics, geographical locations and times. Initially, the trend has been mostly the move of students from the colonies to the colonizers as the colonies had nothing to offer but everything to gain. With the passage of time, the movement was in both directions as many universities have grouped together under the presumption that 'they can't go at it alone' in the contemporary international and competitive environment (Beerkerns 2004). Some of the reasons for such groupings, variously referred to as *associations*, *networks*, *alliances*, *consortia* etc., included activities such as channelling or administrating staff and student exchanges, research cooperation or others. The impact of such changes brought about by the internationalisation of higher education can be assumed to reach deep into the heart of the university. It is assumed that one of these changes should be at the level of university governance.

Governance in higher education refers to the means by which higher educational (also tertiary or postsecondary) institutions are formally organised and managed, though often there is a distinction between definitions of management and governance. Simply, university governance is the way in which universities are operated. Governing structures for higher education are highly differentiated throughout the world. As noted by Altbach (2005), the different models for higher education throughout the world nonetheless do share a common heritage. Coldrake, Stedman and Little (2003) also discussed the shared traditions and history of higher education worldwide. Internationally, tertiary education includes private not-for-profit, private for-profit and public institutions governed by differentiated structures of management. "Capacity building is the ability of individuals, groups, institutions and organisations to identify and solve development problems over time" (Morgan 1996). Thus, in that it strengthens an institution's ability to effectively and efficiently design, implement and evaluate development activities according to its mission, capacity building is a process by which individuals, groups, institutions, organisations and societies enhance their abilities to identify and meet development challenges in a sustainable manner (CIDA 1996).

Context of this Study

'Internationalisation' has been described as "the process of integrating an international dimension into the research, teaching and services function of higher education" (Knight 1993, p.21). External environmental factors such as social, technological, economic and political forces have forced universities worldwide to adapt rapidly, and this resulted in universities opening up their borders in new ways for their services and products (Bartell 2003; Gumport and Sporn 1999). Due to the changes surrounding universities in recent years, in particular, the globalisation of higher education and the corporatisation of universities as independent administrative entities, universities are facing an era of global international competition and are expected to have an international strategy, underpinned by a long-term vision, midterm goals and targets. Different universities form partnerships with other universities locally and globally for various reasons. For instance internationalisation is viewed as an integral part of Canadian universities' institutional strategies, organizational approaches and expected learning outcomes for students (Association of Universities and Colleges of Canada 2007). Some of the reasons for internationalising include preparing graduates who are internationally knowledgeable; building strategic alliances and partnerships with key institutions abroad; promoting innovation in curriculum and diversity of programs; ensuring research and scholarship address international and national issues; and responding to Canada's labour market needs (AUCC 2007).

Aigner, Nelson and Stimpfl (1992, cited in Qiang 2003) point out that there are three main reasons for internationalisation of higher education: interest in international security, maintenance of economic competiveness and fostering human understanding across nations. Qiang (2003) concurs with Knight's (1997) clustering of rationales for internationalisation into four groups, namely, political, economic, academic and cultural/social. It is argued that the political rationale relates to issues of security, stability and peace, ideological influence etc. In the economic rationale, internationalisation is viewed as a contribution to the development of quality human resources who are able to compete globally. In this regard, foreign students are seen as contributing to the institutional income through payment of

higher fees. It is also believed that internationalisation enhances the international dimension of teaching, research and service which results in good quality education. As for the cultural/social rationale, it is posited that an understanding of foreign languages and culture is a very important ingredient of quality education as the graduates produced will possess strong knowledge and skill base in intercultural relations and communications, factors regarded highly by academics as key to internationalisation of teaching/research/service.

Universities have reacted differently to the advent of internationalisation and the most common processes are for institutions to respond by formulating policies to guide implementation. The University of Botswana is well placed to internationalise as its Values Statement advocates "Internationalism through participation in the global world of scholarship, by being receptive and responsive to issues within the international environment as well as the recruitment of international staff and students" (2006, p. 3). Members of the University of Botswana's community are encouraged and expected "to foster an environment of active research, teaching and other interactions on a regular basis with intellectuals and societal leaders from around the globe"; hence, the Office of International Education and Partnerships was established in January 2006 to drive the internationalisation process, to coordinate and enhance the international nature of its policies, operations, partnerships and curriculum and to strengthen existing activities of the University of Botswana (2006, p.3). The University of Botswana's Policy on Internationalisation was approved by the University Council on the 17th of November 2006 for implementation in January 2007.

The University of Botswana has done extremely well in establishing partnerships with institutions of higher learning globally. It currently has over seventy-five active partnerships all over the world with the highest number in Europe (23) followed by the United States of America with 22. The main objectives of internationalisation policy at the University of Botswana are to "1) Expand International Student and Staff Exchanges; 2) Promote International Research Cooperation; and 3) Enhance the Internationalisation of All Curricula' (University of Botswana, 2006, p.2).

Of particular importance for this study is the Music, Education and Cultural Identity programme between the University of Botswana and the University of Jyvaskyla in Finland and other Southern African Universities from South Africa (Potchefstroom and University of South Africa); Kenya (Kenyatta); and Zimbabwe (Africa University). The aims of this consortium included:

- To explore notions of cultural identities through music;
- To make African and Finnish students and teachers of music/music education/cultural education aware of the benefits and challenges of multicultural/transcultural teaching;
- To improve learning and teaching skills of African and Finish music and culture educators (including the classroom teachers), aiming for in-depth exchange of approaches and ideas;
- To boost cultural identities of music teachers in Africa and in Finland;
- To improve the overall quality of music teaching and cultural education in South

Africa, Kenya, Botswana, Zimbabwe and Finland;

- To increase the cooperation between different actors and organisations in the fields of cultural education, music and music education in South Africa, Botswana, Kenya and Zimbabwe (thus strengthening the south-south axis within the project) (CIMO 2011).

In order to achieve the above aims, the partners will engage in the following activities:

- *Teacher and Student Mobility*: As pointed out by the Association of Universities and Colleges of Canada (2009), international exchanges challenge students to think critically about their discipline in a global context and encourage faculty members to think differently about their field of expertise. International experiences not only lead to greater dialogue and intercultural responsiveness, they also act as a catalyst to adjust teaching methodology and examine curriculum.
  - Teacher exchanges may last from one week to three months.
  - Student exchanges vary from three to twelve months.

- *Intensive Courses*: The aim of intensive courses is to share and produce new information. The other aim is to improve the quality of teaching for all parties involved. The courses lasted from one to ten days. These may be hosted jointly by partner institutions.

- *Networking:*
  - Preparatory visits encourage discussion and agreement on the academic content of cooperation as well as the practical issues related to student and teacher exchanges and intensive courses.
  - Administrative visits monitor and further develop network cooperation.
  - Network meetings develop and evaluate cooperation, and disseminate results of network cooperation.

Research Questions

1. Did the participants understand the objectives of the project?
2. What strategies are being implemented to accomplish the objectives of the Music, Education and Identity Project?
3. How did the participants and the university benefit from the programme?

Methodology

Research design

Qualitative research has its roots in the social sciences and is more concerned with

understanding why people behave as they do: their knowledge, attitudes, beliefs, fears, etc. (e.g., why do patients prefer to be involved in decision-making about their treatment?). Qualitative research is a system of inquiry which seeks to build a holistic, largely narrative, description to inform the researcher's understanding of a social or cultural phenomenon. Qualitative research takes place in natural settings employing a combination of observations, interviews, and document reviews. Hence the researchers wanted to understand how the project affected the participants (respondents) and their organisation (UB).

Population and sample

The population for this study was all students who had participated in the student exchange programme of MECI from Botswana, the two lecturers from the University of Botswana who had also participated in the project and two officers from the International Office from The University of Botswana. These were purposively selected because they possessed rich information.

Data collection

Qualitative approaches to data collection usually involve direct interaction with individuals on a one-to-one basis or in a group setting. Data collection methods are time–consuming, and, consequently, data are collected from smaller numbers of people than would usually be the case in quantitative approaches such as the questionnaire survey. However, the benefits of using these approaches include the richness of data and deeper insight into the phenomena under study. In this study, a semi-structured interview schedule was utilised to enable the phenomenon under investigation to be explored in breadth and depth. The semi-structured interviews worked well as the interviewer had already identified a number of aspects he wanted to address, such as lessons learnt and challenges met.

Telephone interviews were carried out with some respondents who were out in the field while face-to-face interviews were used with those who were in Gaborone and surrounding areas. An open-ended questionnaire was used with the officers from the International Office and one participating UB lecturer because they claimed that they were busy while one of the two lecturers was interviewed face-to-face.

Data analysis

Content analysis approach was used, involving coding and classifying data. Content analysis is a procedure for the categorisation of verbal or behavioural data, for purposes of classification, summarisation and tabulation. The content was analysed on two levels. The basic level of analysis was a descriptive account of the data; this is what was actually said with nothing read into it and nothing assumed about it. The other level of analysis was interpretative, and this concerned what was meant by the responses, what was inferred or implied.

Findings of the Study

Understanding of Project Objectives by Participants

Almost all respondents claimed that they understood the main objectives of the study. For instance, one respondent declared that 'The main objective of setting up the MECI Project was to connect with people from different worlds in order to learn about their music and way of life'.

Another respondent claimed that:

> "The project aimed at exposing the different partners to different environments such as education systems, cultures and different ways of life. For instance it was interesting to realize how religious the Finish people are, especially their respect for Christmas as a celebration. Everybody participated in the singing of Christmas Carols and the whole place was decorated with very colourful materials. People also attended services unlike here in Botswana where Christmas is a time when people are feasting without paying tribute to the Christian doctrine. They also believe in the existence of Santa Claus."

Some of the experiences included differences in weather with very long hours of daylight, and, for some, it was the first time to see snow. This was quite fascinating to people who are used to cold temperatures of above 10 degrees Celsius as very cold.

Yet another 2009 participant said that:

> "The project enables participants to share cultural experiences with people from different places. Apart from cultural experiences, as people in the education field we learnt a lot about classroom environments in Finland. Unlike in Botswana, the relationship between the teacher and students is not a master-servant one but the teacher is a parent. The student is not intimidated but is shown a lot of respect."

Another point that interested all participants from Botswana is that teaching is done in Finnish not English, which made learning and grasping of concepts for the locals much easier. They believed that Botswana could learn a lot from Finland, and this may go a long way in solving problems of students' poor performance. Moreover, it could also improve the confidence of most teachers, especially in primary schools.

Another interesting observation by the respondents is that students in Finland learn music from primary school unlike here where they have to wait until they reach secondary school. The schools are also well equipped with state-of-the-art music instruments some of which they knew only in name.

One responded claimed that:

> "The exchange programme helped me a lot as I went there when I was doing my research and I took advantage of the well-equipped library and experienced and supportive staff in Finland to do my research project and when I came back I just polished, and I was one of the first to finish the research project. I am currently using some of the knowledge I gained in Finland to support my teaching."

Most respondents were fascinated by the lack of visible class differences in the Finish society. Quipped one respondent:

> "The Finish people are a very queer society in that it is not easy to differentiate

> people according to class. Unlike here in Botswana, one cannot easily differentiate a lecturer from a mature student as they may all be using public transport or bicycles to come to work. Lecturers do not wear very expensive clothes and they do not gloat a lot."

It can, therefore, be argued that the project objectives were achieved as the exchange participants were able to learn both culturally and educationally and some claim that they are applying what they learnt in their everyday teaching in the schools.

Strategies Used to Achieve Project Goals

According to the respondents, various strategies were used in the project to achieve the objectives, including:

> International staff, visiting scholars, joint student supervision, exchange students, curriculum content that deliberately includes global issues, joint degree programmes e.g., Masters in Development studies with Northern Arizona University, 3+2 programme in mining engineering with Missouri Science and Technology.

Some included: *Orientations, cultural exchanges, student exchanges, staff exchanges intensive courses and networking.*

Orientations

To encourage an open frame of mind and cross-cultural and critical thinking, exchange students underwent two sessions of orientations in their institutions both before they left and when they arrived at the host institution. These orientations, according to one respondent, included:

> "An intensive course on the language used for survival purposes during the stay in the country. This is done immediately when one arrives. The course also includes issues related to weather and cultural practices such as religion and clothing. It addressed the need for vigilance and awareness in working with another culture. It described perspectives on customs and cultural values and demonstrated practices, expectations, and the Finnish worldview. The knowledge of the Finnish language played a significant part in some of the difficulties during the exchange as it mediated a lot of frustrations we would have suffered."

Another respondent declared that:

> "It is during these orientations that we are informed of the stipend and how to save so that one does not run into financial problems. I learnt a lot during my stay in Finland as it was my first time to be away from my country and I had to seriously budget, something I have never done in Botswana as there are relatives and other people who always help."

However, some respondents called for 'the need for a more comprehensive orientation on life in Finland before embarking on the trip' to prepare participants for culture shock.

Cultural exchanges

As illustrated above, culture was one of the main tenets of the whole project and, as one respondent, emphasised:

> "Culture more than language was expressed throughout the experience as an all-pervasive influential characteristic in every aspect of the exchange. We organized an African Cultural day where we displayed African culture, and the hosts also attended and displayed their own."

Course articulation

Course articulation is the process by which one institution matches its courses or requirements to course work completed at another institution. Students use course articulation to assure that the courses they complete will not have to be repeated at the institution to which they are transferring. This has helped both institutions to internationalise their courses to facilitate participants' coursework. Lecturers are encouraged to be flexible in their delivery of lessons and content.

Faculty exchanges

One of the staff members involved in the project pointed out that:

> "Staff exchange is an enriching experience on many levels. It enhances both personal and professional development, stimulates creative ideas, enhances relationships, and strengthens professional knowledge and practice. It provides firsthand experience to different approaches born by institutional diversity. It provides opportunities to interact with new professional contacts, at the same time, laying important foundations for future exchanges and collaborations. The focus of the faculty exchanges is to promote cultural awareness of music education issues and to assist and monitor student mobility. In addition, the project creates avenues for faculty research collaborations during and after the lifetime of the project."

A member of the International Office explained that:

> "The University supports staff exchanges as a form of staff development which provides an opportunity for individuals to broaden their skills and knowledge through on-the-job learning in other University departments or in other organisations. Staff exchanges are intended to enhance the performance of general and academic staff in their current position and to assist staff in their career development. Staff exchanges facilitate the exchange of experiences and ideas that lead to effective and efficient practices."

A senior member of the University management suggested that:

> "The staff exchange program is intended to facilitate the enhancement of individual skills, provide options for music educators, and encourage broader interaction among departments within the institutions. The program allows staff to better un-

derstand the relationship of their current assignments with those of others, thereby generating greater understanding of music education."

Benefits of MECI to the University of Botswana

Curriculum Development

One prominent benefit to the University of Botswana was the collaboration among the University of Pretoria, University of South Africa and University of Botswana staff members in developing a Music Education Programme. This was very important because, currently, Music Education is just an option.

One of the participating lecturers declared that:

> "The partnership has accorded UB increased recognition as an international university especially on the occasion when it hosted the 3rd North-South South Intensive Period (seminar and research) in 2010. In short, UB continues to be internationalized through its participation in the MECI project. UB has saved some funds as its staff and students have been funded by the project at all the intensive periods held to date at North West University, University of Botswana and at the University of South Africa. The lecturers in the music education unit have requested contributions from their Finnish partners on the MECI towards the BEd Music program which is currently being developed. The Finnish partners who are more experienced and enjoy some of the best facilities in their music department at the University of Jyväskylä have contributed immensely towards the program."

This was echoed by a senior officer in the International Office:

> "UB is highly sought after as an international partner due to increased reputation globally. It is also because of the quality of organization and management. It is one of the best in the African region and maybe only second to top South African universities."

Other benefits as enunciated by the International Office were that:

- We have done extremely well in student exchanges with significant growth in student numbers going abroad and coming to UB; staff exchanges, research collaborations and international full-time students have also grown.
- Seeing increased interest in global issues and new programmes that have a global focus. It will take a while to assess real impact.
- Innovation, especially in the use of ICTs in teaching methodologies and video conferencing.
- Increased classroom diversity, lively discussions, but, again, it will be a while to before we know the real impact.
- Increased interest in international education and its related activities, more receptive

to new ideas and global issues of higher education.

Benefits of MECI to the staff

- Research collaboration–managed to publish with colleagues from other institutions in reputable journals.
- Exposure to skills and knowledge in music education and music in general.
-

Benefits of MECI to the students

- Exposure to global cultures and diversity. For instance, one of the respondents claims that, during her visit to Finland, she shared her accommodation with a student from, Iran and the first day was Hell to her as she had misconceptions about people from Iran. She claims that she could not trust her roommate as she feared for her life; but she later settled well and they are now friends.
- They have experienced different classroom environments and are working very hard to implement some of the things they have learnt here. For most students, it was their first time abroad and that on its own is a good lesson.

One of the music lecturers enunciated the students' benefits in the following way:

> "Students got to experience learning in a first-world institution of higher learning. They were exposed to other teaching methods which they may not have been exposed to at UB in state-of-the-art facilities. They also experienced European culture, specifically Finnish culture, first hand and shared it. Upon discussion with the beneficiaries of the exchange program, students have indicated that their visit to Finland was really worth it."

Discussions

From the findings stated above, it is apparent that the networks the University of Botswana has entered have benefitted it in many ways. Firstly, it can be argued that, due to these networks, the institution has built an adequate capacity to handle an increased population of international students in areas such as staff and curriculum development. For instance, the international office came about as a result of such partnerships. Furthermore, the University of Botswana developed and is always fine-tuning its internationalisation policy so as to guide the implementation of its partnerships and networks.

Another benefit is in the area of staff development as members who participated in projects such as MECI were empowered to manage and teach in classroom environments that were more diversified in terms of students' population and curriculum. They employed more internationalised curricula and teaching methodologies. The members of staff who have been involved in the exchanges have taught students in host countries and interacted with lecturers from different environments. Members of staff also benefitted in research collaborations with colleagues from member institutions.

The University also benefitted in that some of its students were exposed to different cultures of the developed world and other countries such as Iran. This demystified some of the misconceptions they held against these countries and cultures.

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SUB-THEME

Synergies in North-south collaboration
From bilateral collaboration to knowledge coalitions

The International Science Programme at Uppsala University
50 years experience of capacity building in basic sciences in developing countries

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Abstract
The International Science Programme (ISP) is devoted to building capacity for scientific research and higher education in basic sciences in developing countries, since 1961 in physics, 1970 in chemistry and 2002 in mathematics. Long-term support is provided to goal-oriented research groups and "sandwich" postgraduate training, with host groups at numerous institutions at Swedish universities and elsewhere. Also regional collaboration and scientific networks are supported. ISP has an internationally constituted Board, and three advisory Scientific Reference Groups. The Swedish International Development Cooperation Agency (Sida) is the main financial contributor to the program, next to Uppsala University. Recently, financial support also by Stockholm University was initiated. ISP recognises that interdisciplinary and applied research, and technology development are important to a number of development challenges. Still, the basic sciences are the pillars on which applied sciences and engineering rest. Increased domestic capacity for research and higher education in basic sciences has a long-term impact on economic growth and poverty alleviation, driven by an increasingly knowledge-based society. The importance of continued support to basic sciences in developing countries was further stressed in a recent evaluation of ISP. The country-based selection of ISP support to research groups has shifted over the years. In 2011, ISP was supporting 30 research groups in total, in Burkina Faso, Ethiopia, Kenya, Mali, Uganda, Zambia, and Zimbabwe in Africa, and in Bangladesh, Cambodia, and Laos in Asia. Support to scientific networking partly compensates for limited resources, facilitating the strengthening of certain scientific fields by south-south collaboration including the sharing of instrumentation and training. In 2011, ISP supported 12 scientific networks in Africa, two in Asia, and one in Latin America.

ISP funding is based on "application by invitation" because support is usually initiated at academic institutions that have not yet reached a degree of excellence that will give them a chance to win grants in open competition. In most cases, ISP support is phased out when an activity has reached a level that will allow for its continued development to be supported by other funding. In the period 2003-2009, ISP phased out support to 33 research groups and four scientific networks not expected to require further ISP funding. These had been supported on average for 17 years, reflecting the time necessary to achieve stability in the conditions for research and higher education in the partner countries. The outcome of ISP support in the last three decades is substantial and consistent with regard to awarded degrees and the dissemination of scientific results by supported research groups and networks. Regardless of subject program and period studied during the last three decades, the outcomes of supported activities per million EUR spent are generally about 12 PhDs, *plus* close to 50 Masters, *plus* around 60 international publications, *plus* more than 100 contributions to scientific conferences, *plus* a substantial number of meetings arranged, *plus* the development of technical resources and scientific contacts to facilitate outcomes. Thus, future ISP support, if operated similarly, can be expected to result in a fairly predictable outcome with regard to the development of academic capacity and the dissemination of scientific findings.

A recent evaluation of ISP concluded that published papers reveal from high to satisfactory levels of research work with a level of citations above world benchmarks. The loss of academics from ISP supported groups and networks to more technically developed countries ("brain drain") has been concluded to be low by studies made so far, although alumni have not been monitored systematically.

To document and prove the impact of the program, the monitoring and evaluation system must be further developed to systematically cover quality and use of results achieved by ISP-supported activities, as well as the impact of ISP support including contribution of ISP alumni to development. The gender distribution of participating postgraduate students approaches 50% with the chemistry program, but female participation is less than 20% in the mathematics and physics programs. This is maybe due to structural factors influencing female participation already at earlier stages in the educational systems.

The International Science Programme (ISP) is devoted to building capacity for scientific research and higher education in basic sciences in developing countries, since 1961 in physics, 1970 in chemistry and 2002 in mathematics.

The program originates in ideas conceived in the 1950s when it was observed that, although Uppsala University attracted students and researchers from many countries, few came from developing countries. At the Institute of Physics the idea emerged of forming a special organisation stimulating the participation of scientists from developing countries, and facilitating and providing contacts, travels, fellowships, accommodation, and medical and social care in Sweden (Lindqvist, 2001). As a result, the International Seminar in Physics was launched in 1960, to which were invited scientists, with priority given to developing countries, and a first batch of trainees arrived at the start of the activities in 1961. A similar program in chemistry was started in 1970.

In 1988, major changes in the mode of operation of the programs were implemented, and they were collected under the common name of the International Science Programs (ISP). This development has been described in detail by Liminga (1996) and Lindqvist (2001). In brief, the program was developed to address long-term support to goal-oriented research groups and "sandwich" postgraduate training. The "sandwich" mode of training, mixing training sessions at host groups abroad with work at the home institution, was discussed already in 1967 (Lindqvist, 2001), and was beginning to be applied in the 1970s. Host groups for "sandwich" training were selected to match the needs of the supported research groups, implying a widening of cooperation to a national level comprising numerous institutions at other Swedish universities. When called for, collaboration with host groups at universities outside Sweden, and with leading institutions in the regions, was introduced. Support for regional collaboration and the formation of scientific networks was initiated already in the early 1980s, but this was considerably expanded from 1988.

In 1988, ISP's position at Uppsala University was consolidated by a government ordinance stating that:

> "the task of ISP is to initiate and support long-term scientific research collaboration between foremost Swedish institutions and institutions in the developing countries, with the objective to build research capacity at universities and research institutes in developing countries within different research programs. ISP shall also promote regional cooperation between developing countries in the fields of science addressed by the program."

Thus, the responsibility of ISP to include other Swedish institutions in the collaboration

support was emphasised, underpinning ISP's role as a national resource. Furthermore, the strategy to support south-south collaboration and regional scientific networks was encouraged.

In 1999, ISP forwarded an application to the Swedish International Development Cooperation Agency (Sida) proposing an expansion of activities to include biology, geosciences, and mathematics, partly based on recommendations in an earlier evaluation of the program (Edqvist *et al.*, 1994). Funding was granted for a workshop in Africa, South of the Sahara, in order to find out about the situation for mathematics in that region and to come up with suggestions as to what a program to strengthen mathematics there should look like. The workshop was organised on 19-21 November in Arusha, Tanzania, following a status assessment earlier that year (Abrahamsson, 2002). It was recommended in the workshop that existing regional centers should be supported and new ones created. The International Programme in the Mathematical Sciences (IPMS) was launched in 2002 (Abrahamsson, 2003), and initially comprised support to a scientific network, the East African Universities Mathematics Program (EAUMP), originally consisting of the departments of mathematics at the University of Nairobi, Kenya, the University of Dar es Salaam, Tanzania, and Makerere University, Uganda, and to the National Centre for Mathematical Sciences (currently the Institute for Mathematical Sciences, IMS), Accra, Ghana.

ISP is governed by an internationally constituted Board, nominally chaired by the vice-chancellor of Uppsala University. From 2001, advisory panels were formalised, in the shape of Scientific Reference Groups, to support the three subject programs with an expanded scientific competence (Sundin, 2012).

The continued operation of the International Science Programme (ISP) is today made possible by funding from the Sida, which took this responsibility from its inception in 1965. Among earlier financial contributors were also IAEA and UNESCO, and NORAD. In 1978, the government agency SAREC took over the main funding. In 1993 SAREC was merged with Sida, but continued to be the main funding entity of ISP until October 2008 when it was resolved as a Sida department. ISP funding was then administered by Sida, through its Secretariat for Research Co-operation.

Sida and SAREC have been the most prominent collaborators, discussion partners, financing bodies, and drivers in developing ISP to its present position. Uppsala University is the scientific and administrative home of ISP and has also provided substantial funding since 1988. From 2011, Stockholm University started providing financial support to ISP, reflecting the successful cooperation of the program with Stockholm University as one of many Swedish institutions.

Strategy and Operation

ISP support to basic sciences in developing countries in most cases is used for applied research in the fields of chemistry, mathematics, and physics; for example environmental chemistry, mathematical modeling of water resources, and solar cell physics. In some cases fundamental studies are carried out by supported activities; for example, in coordination chemistry, algebraic topology, and magnetism.

The support to basic sciences dates back to the origin of the program, but at a conference in 1995 regarding development-oriented research in basic sciences (Carlman and Strömholm, 1995) it was declared that a foundation in the basic sciences is essential for all research in the applied sciences and for long-term development.

ISP recognises that interdisciplinary and applied research, as well as scientifically based technology development, is important in addressing a number of development challenges, but that basic sciences form the pillars on which applied sciences and engineering rest. Without a proper scientific base it is difficult to sustain research and technology that can contribute well to development and create solutions meeting local needs. Increased domestic capacity for research and higher education in basic sciences has a long-term impact on economic growth and poverty alleviation, driven by an increasingly knowledge-based society. A country's domestic competence in basic sciences is crucial for:

- an increased quality of education, at all levels,
- the development of scientific, critical thinking based on reproducible evidence (promoting rational governance and democracy development),
- the development of applied sciences to meet local needs,
- the development of technology, innovation, and engineering on a local ownership basis,
- the adoption of a sustainable use of natural resources,
- the engagement in business and global trade at a level of knowledge which matches global partners, industry, investors, and suppliers of commodities,
- the development of scientific excellence on own terms giving international recognition and self esteem.

In a recent evaluation (GDH, 2011), the approach of ISP is strongly supported and several reasons are given why capacity for science is needed and relevant to development efforts:

- Most of the flagship breakthroughs in development and poverty reduction have science at their core.
- Research in the [basic] sciences is a "public good", and often a global public good.
- Expenditure on [basic] sciences is low, both by developing country governments and their development partners.
- Market forces are such that OECD research institutes, and companies, rarely invest in research of direct interest to developing countries.
- [Basic] science underpins productivity and international competitiveness.
- [Basic] science provides the evidence base for responding to many of the most basic challenges facing developing countries.
- Research and training need long-term investments.

Also, the Swedish Policy for Development Cooperation, 2010-2014, stresses the need to strengthen and develop scientific research in developing countries as a means for strategically combating poverty (Government Offices of Sweden, 2010).

Regarding Africa, the World Bank (2009) concluded that constraints at the level of tertiary education are now impeding growth in much of the region. This indicates an increased awareness of the significance of support to research and higher education in general, where the basic sciences are fundamental to other fields of science.

ISP support collaboration aims at creating sustainable research groups and scientific networks with strong local ownership, and has a long-term approach. South-north collaboration is an important component in the support modality, based on the needs of the collaboration partner in the south, and relevant to the development strategy in the country where the support is received.

The country-based selection of ISP support has shifted over the years. From 1973, the supported activities were mainly in the least developed countries, primarily Sida program countries (Liminga, 1996). In August 2007, the Swedish government issued a new development support policy (Government Offices of Sweden, 2007). As a result of the new policy, Sida decided in 2008 that ISP's research group support must be shifted to a group of twelve "focus countries". The countries are in Africa: Burkina Faso, Ethiopia, Kenya, Mali, Mozambique, Rwanda, Tanzania, Uganda and Zambia; in Asia: Bangladesh and Cambodia, and in Latin America: Bolivia. This resulted in the phase-out of ISP support, as financed by Sida, for example, to research groups in Laos and Malawi, while new support to groups in Burkina Faso, Kenya, Mali, Zambia, and Cambodia was initiated in 2009-2011. In 2011, ISP was supporting 30 research groups in total in Burkina Faso, Ethiopia, Kenya, Mali, Uganda, Zambia, and Zimbabwe in Africa, and in Bangladesh, Cambodia, and Laos in Asia, using Sida funding.

Support to scientific networking partly compensates for limited resources, facilitating the strengthening of certain scientific fields by south-south collaboration including sharing instrumentation and training. Scientific networks may be fully or partly supported by ISP, operate in a variety of fashions (Kiselman, 2011; Sundin 2011), and are not directly affected by the focus country policy. The Sida position in 2008 was to emphasise the importance of focus countries benefitting from ISP network support. In 2011, ISP supported 12 scientific networks in Africa, two in Asia, and one in Latin America.

A particular feature of the ISP operation strategy is that support to research groups is initiated by selection, following thorough investigation of the local conditions, policies, needs, and preferences, and discussions initially at department and faculty levels. It has been pointed out by Sida, and most recently in the 2011 evaluation (GDH, 2011), that there is a risk for a lack of transparency in this process.

The basic reason for the ISP practice of "application by invitation" is that support is usually initiated at academic institutions that have not yet reached a degree of excellence that will give them a chance to win grants in open competition. The practice was initiated in the 1980s when funding to an increasing degree would need to suffice for a fewer number of research groups supported on a long-term basis (rather than shorter term training of individual scientists responding to open calls). From 2009 the selection process has been made more transparent, by formally directing the invitation at the department level. It should be pointed

out, however, that this approach was essentially applied by the mathematics program from its start in 2002. Following the recommendations given in the evaluation, the practices are to be developed further in order to additionally increase transparency, and to consider introducing competition for grants where feasible.

Throughout ISP collaboration, efforts of supported activities to receive funding from other agencies is encouraged, and the nominal exit strategy is engaged when an activity has reached a level that will allow for its continued development supported by other funding, from the country's own government or awarded in competition with other scientists. A phase-out period will then be initiated.

Results

International Science Programme, ISP
In the eight-year period 2003–2010, support was provided to up to 50 research groups and 21 scientific networks annually, with the total expenditure by supported activities averaging at approximately 2.0 million EUR annually. Over this period the following results were achieved for each million EUR spent by supported activities:

- 12 PhD graduations, *plus*
- 50 MSc graduations, *plus*
- 64 publications in international journals, *plus*
- 34 publications in regional and local journals, *plus*
- 127 conference contributions (40% of which to international conferences), *plus*
- 21 meetings organised (workshops, conferences, summer schools, etc.), *plus*
- development of technical resources within research groups and networks, as well as increased collaboration with scientists at, for example, Swedish universities and in the regions.

The scientific quality of disseminated results and defended theses has so far not been systematically investigated. However, a quality review was carried out regarding the scientific publications in 2010 (ISP, 2011), and considered in the 2011 evaluation (GDH, 2011). It was concluded that published papers reveal from high to satisfactory levels of research work with a level of citations above world benchmarks.

The current mode of ISP operation has evolved over many years and is known to have a very low rate of "brain drain", i.e. loss of trained academics to more technically developed countries, much thanks to the "sandwich" model of postgraduate training. As pointed out in the 2011 evaluation (GDH, 2011), though, the evidence supporting this has not been collected systematically and continuously. An early study, in 1976, covering 263 ISP "fellows", found that only 4% had moved to an "industrialized country" (Lindqvist, 2001). Lindqvist (2001) also stated that "when the programme evolved into giving long-term support to research teams, the brain drain has been even lower." Liminga (1996) observed that brain-drain was a matter of concern in the 1970s, and the chemistry program lost a few participants in particular due to drastic political changes in the participants' home countries. When the program was later developed to address long-term support to goal-oriented research groups

and "sandwich" postgraduate training, this problem was largely eliminated. These statements are in agreement with the review of 22 supported research groups in physics as reported in 2009 (van Groningen 2010), where it was concluded that out of 362 people trained only 2.5% stayed in an industrialised country.

In the period 2003 – 2009, ISP phased out support to 33 research groups and four scientific networks (Table 1) not expected to require further ISP funding. Support to another four networks was phased out because their activities came to a halt, or (in one case) ISP support was not longer considered justified. Essentially, all remaining support for activities in Latin America ceased during this period, as well as support in Sri Lanka and in Thailand in Asia. The support phased out in countries in Africa was mainly to research groups in countries no longer classified as "least developed".

Regarding these 37 activities, the number of years of support ranged between 3 and 29, with an average of 17 years, and 19 years being the median. This indicates a bias towards longer term support within the range, which reflects the time necessary to achieve stability in conditions allowing for continued research and higher education in the partner countries.

Table 1. Research groups (RG) and scientific networks (NW) phased out of ISP support 2003 – 2009 because satisfactory operation on other funding could be expected.

Type	Field of Science	Location	Region	Initial year	Final year	No. of years
NW	Biochemistry	Interregional	Interregional	1999	2008	9
RG	Biochemistry	Cameroon	Africa	1988	2008	20
RG	Natural products chemistry	Cameroon	Africa	1991	2008	17
RG	Mathematical sciences	Ghana	Africa	2002	2010	8
RG	Laser spectroscopy	Ghana	Africa	2005	2010	5
RG	Natural products chemistry	Nigeria	Africa	1977	2004	27
RG	Food chemistry	Nigeria	Africa	2002	2005	3
RG	Geophysics	Nigeria	Africa	1984	2010	26
RG	Meteorology	Nigeria	Africa	1997	2009	12
RG	Laser spectroscopy	Senegal	Africa	2005	2010	5
RG	Biochemistry	Tanzania	Africa	1981	2005	24
RG	Natural products chemistry	Bangladesh	Asia	1977	2004	27
RG	Medicinal chemistry	Bangladesh	Asia	1995	2008	13
RG	Crop protection	Sri Lanka	Asia	1981	2003	22
RG	Biotechnology	Sri Lanka	Asia	1985	2004	19
RG	Food chemistry	Sri Lanka	Asia	1995	2009	14

RG	Atmospheric physics	Sri Lanka	Asia	1978	2010	32
RG	Mass Spectroscopy	Sri Lanka	Asia	1981	2010	29
RG	Instrumental development	Sri Lanka	Asia	2005	2010	5
RG	Materials science	Sri Lanka	Asia	1984	2010	26
RG	Materials science	Thailand	Asia	1982	2004	22
RG	Geophysics	Thailand	Asia	1987	2007	20
RG	Biochemistry	Colombia	Latin Am	1987	2004	17
RG	Food chemistry	Colombia	Latin Am.	1992	2004	12
RG	Materials science	Colombia	Latin Am.	1976	2004	28
RG	Materials science	Colombia	Latin Am.	1985	2005	20
RG	Food chemistry	Ecuador	Latin Am.	1984	2007	23
RG	Materials science	Ecuador	Latin Am.	1992	2006	14
NW	Food Chemistry	Latin Am.	Latin Am.	1994	2007	13
NW	Biochemistry	Latin Am.	Latin Am.	2003	2007	4
NW	Biochemistry	Latin Am.	Latin Am.	1994	2006	12
RG	Materials chemistry	Peru	Latin Am.	2002	2006	4
RG	Chemical ecology	Peru	Latin Am.	2003	2007	4
RG	Materials science	Peru	Latin Am.	1983	2009	26
RG	Materials science	Peru	Latin Am.	1982	2006	24
RG	Biochemistry	Uruguay	Latin Am.	1978	2005	27
RG	Biotechnology	Uruguay	Latin Am.	1974	2003	29

The gender distribution of staff and students in supported research groups and scientific networks has been monitored throughout the history of the program. In the period 2003 to 2010, the average proportions of female PhD students were 39%, 11%, and 13%, in the chemistry, physics, and mathematics programs, respectively. The corresponding figures for MSc students were 54%, 18%, and 18%, respectively. In this eight-year period, the only tendencies have been a decline in the proportion of female students in the chemistry program, which is most likely because of the phase-out of support to research groups in Latin America and Asia, which attracted a large proportion of female students. The relatively low proportion of female students in the physics and mathematics program may be due to structural factors influencing female participation already at earlier stages in the educational systems, and seems difficult to improve by stimulating female participation only at the postgraduate level.

International Programme in the Chemical Sciences, IPICS

The results of the chemistry program in the years 1970-1995 have been accounted for by Liminga (1996), and in 1996-2009 with respect to Africa by Sundin (2012). From the mid-1980s to 1995 support was provided to eight research groups in Africa. To allow for comparison with the results of ISP in total in 2003-2008 (see above), SEK was converted to EUR at a 10:1 rate (although the EUR currency did not exist at that time). Calculated this way, the outcome in the early years of support to African research groups was eight PhD

graduations, *plus* 40 MSc graduations, *plus* 93 international publications, *plus* 47 conference reports, per "million EUR".

In the period 1996-2009 support was provided to between six and 14 research groups in Africa, resulting in 14 PhD graduations, *plus* 27 MSc graduations, *plus* 59 international publications, *plus* 12 other publications, *plus* 11 arranged meetings, per "million EUR".

International Programme in the Mathematical Sciences, IPMS
The Mathematics program celebrates its tenth anniversary in 2012. One of the activities supported from the beginning of the program, EAUMP, celebrating 10 years of successful networking, will arrange a scientific conference in Arusha, Tanzania, 22-25 August, 2012. The conference proceedings are planned to, among other things, account for the first 10 years of the mathematics program.

The IPMS support has so far (up to May 2012) resulted in 15 PhD graduations, the first ones in 2008, after six years of operation of the program: three students from Cameroon, two from Ethiopia, two from Ghana, one from Kenya, three from Senegal, two from Tanzania, and two from Uganda. About another 20 PhD students are currently being trained, and some of them are expected to graduate in 2012 or 2013. With the exception of those from Ghana, who were in Sweden full time, these students, selected by the institutions supported, have been trained in "sandwich" programs, that is, they have spent yearly periods with scientific hosts (being collaborating supervisors) abroad. The expenditures by the supported activities in the period 2002-2011 were about 27 million SEK. Thus, the number of PhD graduations from the start of the program was close to 6 per million EUR spent.

The collaborating supervisors to the mathematics program are at 11 Swedish institutions of higher education, including Uppsala University, and at institutions in Austria, Ireland, Norway, and the UK.

International Programme in the Physical Sciences, IPPS
The results of the physics program have not yet been comprehensively compiled since the start in 1961, but have been recorded in so-called Project Catalogues (1992, 1994, 1995, 1995/96, 1997, and 2002), written by the former director of IPPS, Lennart Hasselgren, or Activity Catalogues (van Groningen, 2010).

In the period 1961-2002, fellowships were issued by IPPS or, in the later part of the period, by supported research groups to 575 individuals to spend one month or more with 17 host groups at Uppsala University, 33 at other Swedish universities, 14 in Europe (in Denmark, Finland, Germany, France, Spain, Switzerland, and the UK), one in the USA, and 45 in the regions (in Africa in Botswana, Ethiopia, South Africa, and Tanzania; in Asia in Bangladesh, India, Thailand and Vietnam; and in Latin America in Argentina, Brazil, Cuba, Chile, Ecuador, Mexico, and Uruguay), (Hasselgren, 2004). Of the fellowship holders, 107 came from Africa, 266 from Asia, 108 from Latin America, and 24 from Europe. (East European participation was the case in the early years of the "seminar" program).

Table 2. Research groups in Physics in Africa, Asia, and Latin America (Lat. Am.) supported by the International Programme in the Physical Sciences (IPPS) in 2002. The outcome is listed in terms of PhD and MSc graduations, international peer-reviewed publications, and reports at scientific meetings, per "million Euro" funding. The average duration of support to the groups in each region is given.

Region	No. of groups	Average support duration, years	PhD grad. per MEUR*	MSc grad. per MEUR*	Internatl. Publ. per MEUR*	Conf. Reports per MEUR*
Africa	11	15	11	48	63	85
Asia	5	21	11	28	44	114
Lat. Am.	5	19	15	28	115	214
Total	21	17	12	46	69	122

*converted by 10 SEK = 1 EUR

The results of 21 supported research groups as reported in 2002 (Hasselgren, 2004) indicated, for example, in total 100 PhD and 140 MSc graduations since the start of support to each group. It was pointed out that 17 of the groups started "from scratch", meaning that several years of support would be expected to be needed before the first results were published and the first students graduated. The total funding to the 21 groups was about 86 million SEK. To allow for comparison with the results of ISP in total in the period 2003-2008 (see above), SEK was converted to EUR at a 10:1 rate (Table 2).

The results of 22 supported research groups as reported in 2009 (van Groningen 2010) covering the period 1998-2008, similarly corresponds to 14 PhD graduations, *plus* 47 MSc graduations, *plus* 55 international publications, *plus* 61 local/regional publications, *plus* 108 conference reports, per "million Euro" of funding.

Discussion

Table 3. Outcome per "million EUR" by IPICS, IPMS, IPPS, and ISP as a whole, calculated on data regarding partly overlapping time periods 1985-2010. nd = no data

Program and Period	PhD grad. per MEUR*	MSc grad. per MEUR*	Internatl. Publ. per MEUR*	Local/Reg. Publ. per MEUR*	Conf. Reports per MEUR*	Meetings arranged per MEUR*
IPICS (1985)**-1995	8	40	93	nd	47	nd

IPICS 1996-2009	14	27	59	nd	nd	11
IPMS 2002-May 2012	6	nd	nd	nd	nd	nd
IPPS (1985)**-2002	12	46	69	nd	122	nd
IPPS 1998-2008	14	47	55	61	108	nd
ISP 2003-2010	12	50	64	34	127	21

*converted by 10 SEK = 1 EUR; **approximate starting year of period (see Table 1).
The similarity in the relative outcomes of the individual programs, independent of time period considered, with ISP in total in 2003-2010 is striking (Table 3).

As argued by Hasselgren (2004), there may be a lag phase until a supported activity yields outcomes in terms of, for example, publications and graduations, depending on the situation at the beginning of support. This may partly explain the relatively low rate of PhD graduations within the chemistry program until 1995 (although a high rate of international publication is observed), and surely that of the mathematics program, which started in 2002 and saw the first PhD graduates resulting from the program in 2008.

However, the compiled results collectively point at a general picture regarding the results of ISP support, where the outcomes of supported activities per million EUR spent are about 12 PhDs, *plus* close to 50 Masters, *plus* around 60 international publications, *plus* more than 100 contributions to scientific conferences, *plus* a substantial number of meetings arranged, *plus* the development of technical resources and scientific contacts to facilitate outcomes. Thus, ISP support can be expected to result in a quite predictable outcome with regard to the development of academic capacity and the dissemination of scientific findings.

The consistent outcome of activities supported by ISP falls well in the cycle of support, where at a given time support is provided simultaneously to activities being in the initial stages of academic and scientific development, to activities that have reached a productive level but are still dependent on ISP support, and to activities that have reached a degree of excellence where ISP funding becomes less and less important. In the latter case, an ISP phase-out of support is to be initiated, releasing ISP financial resources in favour of support to new activities at the beginning of the cycle.

The recent evaluation of ISP (GDH, 2011) points to important directions for future development, most notably with regard to a more comprehensive system for continuous monitoring and evaluation of the program, focusing on outcome and impact.

ISP particularly sees a need to develop follow-up to also include the scientific quality of results obtained and degrees awarded by ISP-supported activities, the application and use of results, and the broader impact of ISP support, including activities of alumni. GDH (2011) puts particular emphasis on the importance of tracking alumni:

> ISP alumni could, for example, be systematically surveyed on a periodic basis to identify specific examples of how they had been able to use their scientific discipline and skills to influence broader public policy and contribute to poverty alleviation.

Conclusion

ISP has evolved over its 50 years of existence from a "seminar program" in physics to a program of development support to scientific research and postgraduate education in the basic sciences, chemistry, mathematics and physics. The outcome of ISP support in the last three decades is substantial and consistent with regard to awarded degrees and the dissemination of scientific results by supported research groups and networks. To document and prove the impact of the program, the monitoring and evaluation system must be further developed to systematically cover quality and use of results achieved by ISP-supported activities, as well as the impact of ISP support, including contribution of ISP alumni to development.

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Abbreviations and Acronyms

EAUMP	Eastern African Universities Mathematics Programme
EUR	Euro (currency units)
IAEA	International Atomic Energy Agency
IMS	Institute for Mathematical Sciences (Ghana)
IPICS	International Program in the Chemical Sciences
IPMS	International Program in the Mathematical Sciences
IPPS	International Program in the Physical Sciences
ISP	International Science Programme
No	Number
NORAD	Norwegian Agency for Development Cooperation
NW	Network
MEUR	Million EUR
MSc	Master of Science (here including Master of Philosophy, MPhil)
OECD	Organisation for Economic Co-operation and Development
PhD	Doctor of Philosophy

RG	Research group
SAREC	Swedish Agency for Research Cooperation with Developing Countries
SEK	Swedish crowns (currency units)
Sida	Swedish International Development Cooperation Agency
UNESCO	United Nations Educational, Scientific and Cultural Organization

Is competition a relevant approach to quality assurance for institutional research capacity strengthening?

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ABSTRACT
In 2011, Universities Denmark introduced a new mechanism for university collaboration under the title "Building Stronger Universities in Developing Countries" (BSU). This initiative, financed by the Ministry of Foreign Affairs (Danida), focuses primarily on institutional capacity building, especially in connection with PhD training and related structures. BSU represents an innovation in its bringing together of all relevant Danish universities in a single collaborative structure. BSU is organised into four platforms that represent broad focus areas. The platforms have identified separate countries/universities as core partners, with three platforms present in Ghana and Tanzania, and one platform being present in Nepal, Kenya and Uganda. The platforms have been competing for resources for the initial two-year phase. This paper compares BSU with existing Danish mechanisms for support to research for development, discusses the role of competition in a project that focuses on long-term institutional capacity strengthening and identifies early lessons learnt. It concludes that quality assurance in this area must be established through other means than competition in order to avoid counterproductive discontinuities in long-term university development at the partner universities.

Globally, the conditions for universities have changed during recent decades – from a situation where it was simply a privilege for any student to gain access to a university to a state in which universities compete to attract the best students. Universities increasingly compete for students as well as on a range of other assessment criteria, such as the number of international peer-reviewed publications, the ability to attract external research funding, the number of PhD students, and the ability to send as many students through the education system as quickly as possible. In Denmark, such performance indicators determine the distribution of state funding among the Danish universities that, for this reason, find themselves in a very direct situation of competition. Hence, the university climate in Denmark is geared towards competition, as is the case in many other countries.

The underlying assumption is that competition drives universities towards excellence in research, education and knowledge dissemination. This may not always necessarily be true. The realisation that competition is not automatically linked to quality is perhaps most clearly reflected in the strong emphasis that is placed on the accreditation of higher education institutions around the world. When reviewing documents on accreditation and quality assurance among universities, competition is mentioned nowhere as a tool to enhance the quality of institutions; if mentioned at all, competition is noted as a contextual fact among universities. As an example, the Accra Declaration of Association of African Universities on "GATS and the Internationalization of Higher Education in Africa" does not even mention the word 'competition'. Hence, one could argue that, globally, increasing competition among universities makes it imperative for the institutions to enhance and monitor their quality to be able to survive; in this way competition becomes an indirect engine for quality if, and only if, appropriate quality assurance mechanisms are established.

Here, I am not arguing against competition. For example, competition may very well enhance the quality of research through the competitive selection of research projects during funding procedures; but I would argue that this is not a relevant mechanism for prioritising funds for North-South collaboration for university-level institutional capacity strengthening. In this paper, I wish to discuss the experiences with competition as a mechanism for quality assurance in a North-South university collaboration recently launched by Universities Denmark under the label "Building Stronger Universities in Developing Countries" (BSU). I am in no way impartial to this project – I function as Chair of one of the thematic platforms of BSU, and as such I have had the opportunity to harvest experiences first-hand that have informed this paper. Furthermore, I have been involved in developing the mechanism that I now criticise. I do so under the heading 'lessons learnt', so I am also a target of my own critique here. I believe that we should not only share positive lessons learnt, but also that we can learn more from problem identification than from problem-free versions of success stories. In this paper, I will proceed by briefly presenting BSU; then I shall highlight how competition has played, and is playing, an important role and why I see this as a problematic approach to quality control in the context of capacity strengthening programmes. I shall end by suggesting what I see as a better approach.

BSU has been conceptualised by Universities Denmark with a number of important concerns in mind:

- Danish universities wished to strengthen their positive role vis-à-vis the global development agenda in general, and with regard to Denmark's (Danida's) policies and strategies in particular.
- Danish universities have agreed to set aside competition among themselves in favour of collaboration in this particular arena, thereby creating a combined Danish resource base in the context of BSU.
- Danish universities wish to contribute to institutional capacity strengthening in the areas of research, education and dissemination through long-term north-south-south partnerships as part of their global responsibility.

In 2010, an application for funding was submitted to the Danish Ministry of Foreign Affairs (MoFA) and the application was supported with an initial grant for a two-year Phase 1 of DKK 60m (2011-13), and funds of DKK 90m earmarked for 2013-15. Recently, an additional DKK 19m has been released. The positive reception of the proposal in the ministry, as well across the political spectrum in the Danish Parliament, is a clear reference to the fact that Danish universities have replaced their mutual competition with collaboration in the context of BSU.

This collaboration is organised into four thematic platforms: 1) the Platform for Stability, Democracy and Rights; 2) the Platform for Environment and Climate; 3) the Platform for Human Health; and 4) the Platform for Growth and Employment. The secretariats of the first two platforms are based at Aarhus University, Denmark, and the latter two at University of Copenhagen. The emphasis on institutional capacity building necessitates a rather limited number of partnerships in order for the initiative to have an impact in terms of added value. Currently, the Platform for Stability, Democracy and Rights is active in Kenya, Uganda and Nepal, whereas the other three platforms collaborate with eight universities in Ghana

and Tanzania. The difference in country selection is partially linked to the thematic foci of the platforms, and partially to the existence of a critical mass of researchers across Danish universities who could contribute to the different platform themes in specific countries.

Universities Denmark had, as part of the proposal to Danida, also proposed a competitive model for allocation of funds among the platforms. Each platform could achieve either DKK 4m, 7m, or 10m per year during Phase 1; but it was a zero-sum game meaning the if one platform got DKK 10m, another would only get DKK 4m. The four platforms were to develop activity plans for each potential funding level and submit these to an international review panel that would assess the activity plans in accordance with a set of predefined criteria. This procedure is, of course, rather similar to what would be done in the case of funding for research proposals, where it often works well if the reviewers are impartial and well qualified. However, I shall argue that it was not entirely appropriate in the case of a project with a focus on research capacity strengthening – not because of the review panel, but because of the nature of the project – and that a different mechanism should be put in place for the second phase of the programme. In addition to the specific relevance to BSU, I trust that the issue has relevance in the context of funding for N-S-S collaboration for institutional capacity strengthening more generally.

I mentioned earlier that south partners differed across platforms. Due to its thematic emphasis, the Platform for Stability, Democracy and Rights focused on post-conflict countries and regions, and in those countries we focused on universities that were less privileged by other existing collaborative programmes with donor funding. Other platforms included universities such as the University of Ghana and the University of Dar es Salaam which were among the strongest in their geographical regions. There is nothing wrong in this variation of selection, but due to the competitive application process, some of the least developed universities were placed in direct competition with some of the strongest. The foreseeable consequence, unfortunately, was that existing inequities among these universities were merely reproduced since south partner universities were – of course – actively involved in the production of the application and the amount of experience with such processes varied dramatically. In a project where the objective is to address such inequities by promoting institutional capacity building – and where it is not an identified objective to strengthen the strongest university in a given geographical region – this is of course a problem. Competition can only be meaningful when the projects that compete are comparable – and they are not, when universities in politically less stable contexts in some of the poorest countries compete directly with universities in politically stable contexts in comparatively better-off countries. Competition in this case punishes those with greatest capacity strengthening needs – unless, of course, this variation among south partners is taken out of the equation by leaving the formulation of the applications to the Danish universities; but this would result in an excessively north-driven approach that would be highly unwarranted.

The outcome of the competition was that two platforms received an annual allocation of DKK 4m, and two received 250% of this amount, i.e. DKK 10m. This has further exacerbated the problem since the strongest universities would have a much better chance to position themselves favourably for the second phase than the weaker universities that are in greatest need. With a uniform BSU organisation across platforms the consequence has also been much higher transaction costs for the platforms with less funding compared to the wealthier

ones, and this further added to the initial problem.

The issue here is that the competitive mechanism in this case directly contradicts the programme objective of need-based institutional capacity building because the enhancement of the capacity to compete for funding was an implied objective of the programme. This was not only an issue in terms of the initial process. If BSU were to continue the same approach, it would effectively undermine sustainability, i.e. the possibility for long-term planning and even long-term collaboration which is what is required to strengthen university capacity. The political will and the establishing of a functional framework that allowed for long-term capacity strengthening programmes was one of the greatest benefits of BSU but a competition between platforms could undermine this great advantage from the inside since it would introduce a high degree of uncertainty.

In spite of the unwarranted consequences of misplaced competition, BSU was an excellent initiative and it was not surprising that it had some teething problems. With the launching of activities having started in early 2012, and an emphasis on activities that in various ways would strengthen PhD-level activities with a longer-term view of promoting the establishment of PhD schools where appropriate, and with considerable synergies between these activities and research collaborations that have other funding, BSU was a very promising new framework. The teething problems could potentially be addressed jointly by universities in both the north and south and in collaboration with MoFA that should also be inherently interested in alleviating university inequities rather than exacerbating them. This realisation seemed evident in the decision by the Rectors' Conference to distribute an additional allocation of DKK 19m equally across the four platforms that had been awarded to BSU by MoFA. This demonstrated the need for a political decision to set aside competition in favour of securing sufficient funding for long-term university partnerships when the primary purpose is capacity strengthening rather than 'simply' research collaboration.

I am now able to answer my admittedly rhetorical question "Is competition the only possible approach to quality assurance for long-term institutional research capacity strengthening?" with a clear 'no' – it is not even an appropriate approach.

Since direct competition among platforms and south partners at the stage of planning is inappropriate as a quality assurance mechanism in the case of capacity strengthening, then how can quality be ensured?

The criteria that were defined in connection with the competitive process could serve as a useful point of departure when applied as monitoring and evaluation tools rather than as application assessment tools. These criteria included, among others, institutional, national and regional relevance of proposed activity plans and their integration in existing strategy plans, if any; and appropriate description of institutional needs and their match with the available capacity, including human resources to be involved in BSU across the Danish university landscape. Such criteria could be further developed to assess the performance of the BSU collaboration at each partner university, not with a primary view to compare across highly different contexts, but to compare progress at the institutional level as BSU collaboration moves ahead.

Hence, the ongoing engagement of BSU partners would be based on regular monitoring and evaluation that would be conducted in relation to funding cycles at meaningful intervals. I suggest they should be based on the following principles:

- Assessment is not primarily at platform level but at the level of individual partner universities in both the north and the south. Hence, the performance of one university does not impact access to funding for another university within the same platform.
- In the south, assessments should be relative to the specific activity plans and objectives that have been established for the period for a specific south partner, and they should take the country context into consideration.
- All platforms have an equal share of the total budget; allocations can be transferred within and across platforms based on mutual agreement.
- A sum is allocated for cross-platform activities and activities that strengthen synergies with existing networks such as SANORD.
- Research activities that contribute directly to capacity strengthening are integrated in BSU, and synergy with these and other research activities and networks are included in the quality assessment.

The above points are of course tailor-made to the needs of ensuring quality in BSU, but in a slightly more general version they may have general applicability as a point of departure for a cross-cutting discussion of how to assess quality in university-level N-S-S capacity strengthening programmes in a way that promotes a more equitable access to resources, and SANORD could provide a valuable forum for the development of guidelines in this important area.

Therefore, let me conclude by also noting the need and the interest to develop opportunities for north-north exchange between initiatives like BSU and other such programmes within the Nordic countries and in the EU; and the dedication among SANORD partners to participate in enabling north-south-south exchanges and develop models for north-south collaboration of this nature. As BSU gradually develops and hopefully grows, and in view of a potential expansion of SANORD in the future, I expect that there will be an increasing overlap between SANORD and BSU partners in the future. I look forward to this collaboration as it develops, as we learn lessons from our experiences and are able to improve our frameworks collectively.

Epilogue

In a very surprising move, the Danish MoFA in June 2013 decided to redesign the BSU programme. MoFA informed that it would reduce the number of South partner institutions from 11 to 7 with effect from phase II and that the platform structure would be abolished. Instead, Danida would delegate the administration directly to each of the institutions in the South, which implied that Universities Denmark would no longer be part of the programme management. Instead, Danish universities would henceforth be expected to bid for contracts to carry out packages of activities for each of the seven south institutions. While it is too early to assess how this new model will function, it is deeply regretted across the Danish research milieus that the N-S university partnership model is abandoned; and it is deeply regretted

that MoFA's unilateral decision to reduce the number of south partners in these cases severs the collaborative links that were being developed between universities in north and south. This development points to a cautionary lesson concerning the political vulnerability of donor-funded university collaboration that aims at research capacity strengthening at the institutional level, with the interests of the south partner institutions being jeopardized when long-term collaboration cannot be secured.

International co-operation in student and staff mobility
between universities in Finland and universities in Africa

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Abstract
International university co-operation involves the interaction of universities representing various nations in pursuit of similar goals. Most universities and educational systems, with the assistance of governments and international organisations, are developing policies to attract and facilitate student and staff mobility. In Finland, the launching of the North-South-South Higher Education Institution Network Programme (NSS) by the Centre for International Mobility (CIMO), which is funded by the Finnish Ministry for Foreign Affairs, has facilitated international student mobility between universities in Finland and universities in Africa and other developing countries. Based on interviews with students and academic co-ordinators, CIMO archives and data (questionnaire administered to students, staff and academic and administrative co-ordinators) used for the evaluation of the 2009 NSS programme, this paper examines the criteria for selecting universities in Africa for international university co-operation with universities in Finland, the motives for participation in the programme by students, staff and universities, and the benefits and challenges involved in mobility from the perspectives of the co-ordinators, students and staff. It is hoped that participating universities will utilise the results in making positive changes, especially in universities in Africa when it comes to students' welfare, learning difficulties and challenges associated with students' adjustment to the new learning environments and other barriers that may hinder effective learning from taking place. This is in an effort to make universities in Africa more attractive destinations for international student mobility.

International University Co-operation (IUC) involves the interaction of universities representing various nations in the pursuit of common goals. It calls for "an infusion of ideas, people and resources with the aim of disseminating and advancing knowledge in, and around, and throughout the world-at-large" (Denman, 2002, p. 3). This section presents the history of IUC from a global perspective and then situates IUC in student mobility within the Finnish context, paying particular attention to the North-South-South (NSS) co-operation programme that involves both universities in Finland and universities in developing countries.

IUC is not a new phenomenon. It has existed since the emergence of higher education (Beerkens, 2002). Its origin can be traced back to the middle ages when there was the need for a common language and a uniform programme of study and examination that could enable students to study in different places and have their degrees recognised throughout Christendom (Knight and de Wit, 1995). In most parts of Africa and Asia, the origin of IUC could be traced back to colonialism. As Knight and de Wit (ibid) note, most universities in Africa were constructed with financial assistance from colonial governments. For example, most universities in French-speaking Africa were built with assistance from the French government and followed the French model of education. On the other hand, universities in the former British Empire were constructed according to the British system of higher education. As a consequence, French and British influences remained visible in their ex-colonies even after most of these countries gained their independence. This is evident in the

way that these empires exported educational programmes to their colonies, co-operated in the areas of research, publications and the international mobility of students and scholars (ibid).

Knight and de Wit (1995) and Denman (2002) maintain that IUC took form only after World War II, with the subsequent emergence of the USA and the Soviet Union as the two superpowers. In the view of Knight and de Wit (ibid), the USA and the Soviet Union supported international co-operation for political reasons. The aim was to understand the rest of the world and to maintain and expand their influence. This situation changed in the 1960s and the 1970s with the decolonisation of the world and the expansion of higher education. During this period, IUC was found mostly in the areas of student mobility, faculty and funds transfer from the south to the north. The situation changed even further in the late 1980s and early 1990s. This was as a result of the collapse of communism and the threatened position of the USA as the economic superpower by Japan and the European community. During this period, Japan and the European community competed with the USA by investing in research and development programmes.

In the views of Denman (2002), and Teather (2004), IUC grew in intensity and escalated from the 1980s to the present day due to the doubling speed of globalisation. Today, there are various types of classifications of international university organisations. In a review of international collaboration that has emerged in higher education, Beerkens (2002) notes that terms such as consortia, networks, alliances, joint ventures and associations have been used to describe international collaboration in higher education. De Wit (1998, cited in Beerkens, 2002; Chan, 2004) has classified such arrangements in terms of academic associations, academic consortia and institutional networks. Whatever name is adopted for such international collaboration, Chan (2004) notes that facilitating IUC in staff and student mobility, curriculum development, joint course delivery and research collaboration are some of the activities they intend to accomplish.

In Finland, since the 1990s student mobility has been one of the parameters used by the Finnish Ministry of Education to measure the performance of Finnish higher education institutions in relation to internationalisation (CIMO, 2006). Various funded programmes that have promoted student mobility have been designed and administered by the Finnish Centre for International Mobility (CIMO). Amongst these programmes, CIMO (ibid) notes that in Finnish higher education, the Erasmus programme has been the most important international mobility arrangement. Such an arrangement has been Europe-centred (CIMO, 2007). There also exists other funded programmes or arrangements that target specific groups of people, such as bilateral scholarship, FIRST, Nordic grant scheme, CIMO fellowship, Russian scholarship to Finns and North2North. In 2004, CIMO launched the NSS higher education co-operation programme that aimed to promote the mobility of students and staff in Finland and other developing countries, including Africa. CIMO (2006) observes that over the past five years, mobility from Finland to Africa and Oceania has more than doubled.

The NSS co-operation programme works on the basis of a form of networks, with partners representing universities in developing countries, with at least one university in Finland acting as the co-ordinating institution. An examination of the different countries that make up the networks and the list of eligible African countries reveals that not all African countries

shown as eligible for the NSS programme are part of the networks. The data further revealed that some African countries were more involved in the networks than others.

The purpose of this paper is to examine IUC in terms of student and staff mobility between universities in Finland and universities in Africa. This paper exploits the opportunity created by the NSS higher education co-operation programme between higher education institutions in Finland and developing countries, in a bid to understand the criteria used by Finnish institutions in selecting African partners for co-operation. It also examines the rationale for participation in the programme by students, staff and institutions. Focus is also on the benefits and challenges involved in mobility, from the perspectives of students and staff. Based on the findings, suggestions on how higher education institutions in Africa can become attractive destinations for student mobility are made. It is worth mentioning here that this paper is based on the author's master's thesis; hence see Eta (2012) for a more detailed description of the aim, and the theoretical background.

Methodological approach to analysing co-operation between Finnish and African universities

The focus of this paper is to examine how IUC in student and staff mobility takes place between universities in Finland and universities in Africa, especially in the areas of selecting partners, participants' motivations, benefits and challenges. This study relies on data from three sources: CIMO, data used for the 2009 NSS evaluation programme, and interviews (see Eta 2012 for more detailed argument of the methodological choices (data, sample, size, and analysis). The CIMO documents examined included countries considered eligible for participation in the programme, long-term and other partners of Finland, the different networks that make up the NSS programme and the different countries that made up each network between 2009-2011. In addition, the number of incoming students from Africa to Finland by region and the number of outgoing students from Finland by target region and country between 2000-2008 were also examined.

Although these documents provided some insight into the overall nature of the co-operation, the amount of information provided was limited, in the sense that it did not provide answers about why some African countries were more active in the networks than others. Furthermore, these documents did not cover the experiences of students and teachers while in Finland or in partner countries in Africa. It is based on these limitations that questionnaires distributed to administrative co-ordinators (1), teachers (4) and students (11), for the purpose of the 2009 evaluation of the NSS higher education co-operation programme was sought and used in this research. In addition, interviews were also conducted with five students (three African students from Tanzania and two Finnish students) who had a mobility status under the NSS programme, and also one administrative co-ordinator from one of the networks in the NSS programme. In total, the sample comprised of two administrative co-ordinators, four teachers and 16 students. For purposes of anonymity, all respondents have been allocated a code. The administrative co-ordinators are referred to in this paper as C1 and C2. The codes T1, T2, T3 and T4 have been used to identify the four teachers involved in the study. Finally, students have been coded S1-S16.

Due to the subjective and varying nature of responses, content analysis of all the responses was carried out to determine who said what and why. These responses have been grouped,

categorised, and in some instances, compared. The results discussed below have been divided into three parts. The first part focuses on the selection criteria of African partners for co-operation with Finnish universities. Part two looks at the motivations for taking part in the programme from an institutional level and also from the perspectives of individual students and staff. Finally, part three concentrates on the challenges and benefits of the programme from the standpoint of administrative staff, students and teachers.

Selection criteria

The selection of African partners for co-operation was done at national and institutional levels. It was very interesting to find out that at the national level, priority was given to (1) Official Development Aid (ODA) recipient countries as defined by the Organisation for Economic Co-operation and Development (OECD) and (2) long-term partners with Finland. The ODA recipient countries were chosen based on per capita Gross National Income (GNI). These countries can be divided into four categories. The first category of African countries are those considered as least developed countries, the second category are low-income countries, the third category are those countries regarded as lower middle-income countries and the fourth category are the upper middle-income countries and territories. Of the 52 ODA countries, 33 are considered to be least developed countries, five as low-income countries, eight are considered to be lower middle-income countries, while five countries are considered to be upper middle-income countries.

Besides the ODA recipient countries, priority was also given to Finland's long-term partners and primary co-operation partners. This, in effect, means that eligibility to ODA may not necessarily guarantee a place on IUC with Finnish universities. This may partly explain the reason for the non-involvement of all African countries considered as eligible for the NSS programme in IUC with Finnish universities. These long-term African partners and primary countries include: Angola, Benin, Botswana, Burkina Faso, Central African Republic, Congo (Dem. Rep.), Congo (Rep.), Côte d'Ivoire, Djibouti, Egypt, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe.

At the university level, the selection criteria were synonymous to those used at the national level. When asked the criteria for selecting African partners for IUC with Finnish universities, the responses given by the co-ordinators pointed to the fact that the selection was based on co-operation that already existed. For example, one co-ordinator stated that "When we started the programme, we were looking at already existing co-operation partners and based on our existing co-operation with these universities we formed our network" (C1). The other co-ordinator said that, "We approach partner universities [in this case the University of Namibia, University of Cape Town, South Africa, University of Pretoria, South Africa, University of Botswana and two universities from Kenya] based on the existing collaboration in research and student and teacher exchange" (C2).

Based on the fact that these universities worked and expanded on existing relationships, it also explained in part why not all African countries stated as eligible for the co-operation programme were in IUC with Finnish universities. For example, Cameroon was considered eligible for ODA, but not part of the IUC with Finnish universities. From the response of

'C1', it may be difficult to accept universities from Cameroon or new partners in the IUC programme because:

> "…the funding is limited, we are not able to cater for more universities… there is not enough funding to send students and so on. It is not easy to start new relationships especially because you don't know who is who and we have not co-operated with universities in Cameroon in any project. We need to gain trust and know that all partners have the same objectives. People have used this in the past as a means to achieve other things…maybe if we have a lecturer from Cameroon who has come on a visit or to do other things …then we can consider because then the initial contact would have been created."

From the above comment, it is evident that acceptance of new partners into the networks may not be possible due to limited funding, lack of trust in new partners and because the networks were built on existing relationships.

Motivations for participation

The motivations were analysed from the level of co-ordinators, teachers and students. For the co-ordinators, the motives for participation in the co-operation programme centred on students, teachers, teaching and research, and internationalisation efforts in general. One co-ordinator said, "It is to give our students, teachers and researchers the opportunity to get exposure and to improve on their education, teaching and research activities… It is also to enhance the quality of our teaching…." (C1). Similar to this view, the other co-ordinator thought that "it is good for our students to get exposure to other cultures, other countries and to understand global issues and to make a better input and contribution in the future… maybe that could help them in the long run to work and to fit fully in the global labour market" (C2).

For the teachers, the motives for participation in the programme varied for the four teachers who responded to the questionnaire for the evaluation of the 2009 NSS programme. For one of the teachers, the programme was "academically exciting and the structure was attractive" (T2). This view was shared by the other teachers, in addition to their other motivations. One of these motivations was "to strengthen and continue the valuable network that has already been webbed" (T3). The existence of such networks, according to one of the teachers, was motivating as it was an opportunity to further develop research and educational collaboration with universities in the south and it was in line with the internationalisation efforts of the university (T1). Finally, one of the teachers noted that having "international exposure and learning from the teaching approaches/curriculum of a European institution" (T4) was the main reason for participation in the programme. In addition, the teachers saw the programme as an avenue for making contacts which could help them in their careers.

Four recurrent themes were identified as motivations for students' participation in the programme. These themes centred on international exposure, funding, interesting destinations and a quest for knowledge. For some of the students, studying in an international environment like Finland, where international programmes were offered, gave them the opportunity for interaction with students from different countries and cultural backgrounds, and such exposure, according to them, could be an edge in the job market. Experiencing a

new way of teaching, of learning and a new way of life in general was also what some students considered to be international exposure and for these students, it was all about learning and knowing others.

Funding was also considered to be a big motivating factor for students' participation in the programme. Despite the fact that these students had other motivations, participation in the programme would not have been possible without funding. As one of the students explained, "Flight tickets are so expensive. Not just the ticket, I would have to think about living costs and rents…without the funding, I would not have applied to go on mobility especially because the programme is just for three months" (S14). However, it is interesting that there were some differences in opinion between Finnish students and African students. For all the African students, the fact that the programme was funded was the main motivation, for without the funding, participation in the programme would not have been possible. For the Finnish students, on the other hand, funding was important but was not ultimately the deciding factor for them. For them, the programme provided a once in a lifetime opportunity to visit an African country and they would have sought funding elsewhere in order to participate. It is worth mentioning here that students who take part in the programme receive grants for housing, living allowances, flight tickets and visa fees.

The destination, whether going to Finland or countries in Africa, was seen as a motivation by the students. For these students, it was the first time they had visited either an African country or a European country. As such, taking part in the IUC programme was seen as a "once in a lifetime opportunity" (S11). For two of the Finnish students, it was all about having an African experience first-hand and forming their own impressions. While for one of the Finnish students:

> "I am interested in Africa in general, to see what it actually looks like, to see how it is to study there … in Finland and Europe in general I think the ideas about Africa are so narrow-minded and really people have their own motivation of what they tell about Africa" (S15).

For the other Finnish student, it was "a chance to visit and see Africa and form my own impressions about it" (S16). Furthermore, the programme was thought to be exciting because "at the moment, it was the only programme directed towards Africa" (S6). Just like the Finnish students, for one of the students from Africa "the programme was an opportunity to visit a European country which is the dream of most of my classmates back home" (S13).

Finally, the last motivation was for academic purposes. For some of the African students, most of the courses that they studied while in Finland were not offered at their home universities. Hence, participation in the programme was an opportunity to take those courses which were taught from an international perspective. Furthermore, for these students, their studies in Finland gave them access to up-to-date books and journals which, according to them, were lacking in their home universities. Unlike the African students, the Finnish students thought that participation in the programme was not really beneficial in academic terms. Insufficient books, strikes, power cuts, low internet connection speeds and noisy and insufficient learning spaces hindered effective learning from taking place. This point was also supported by one of the administrative co-ordinators who said that "I am not sure our students benefited from

the teaching there [in Africa] but I think overall, it was a good experience…" (C1).

Benefits and challenges

The IUC programme has brought together teachers and students through intensive courses and through teacher and staff exchanges. Bringing together students and teachers from different countries and from different cultural backgrounds has opened new areas of research that would otherwise be obscured, especially in the area of human rights and disabilities and in the area of management of sustainable tourism. The IUC programme has benefited in the area of publications (e.g. Saarinen, Becker and Wilson, 2009).

In addition, the contrast experienced in teaching methods between Finnish lecturers and African lecturers were considered useful in the rethinking and reshaping of course content and methods of delivering lectures. The IUC programme, especially in teacher mobility, contributed to the planning of a course in research methods and also contributed to the creation of three courses in the Masters in Business Administration programme at the University of Botswana.

The benefits for students were summarised under international exposure, personal growth and academic/career development. In terms of international exposure, the students thought that learning in an international environment with unfamiliar faces and with different learning approaches offered them the opportunity to look at life in a broader perspective. In addition, although students were not very sure, they thought that such an experience could give them an edge in the labour market. Another benefit of the programme was seen in terms of personal growth. For some students, contact with other cultures and people was an opportunity for them to learn more about themselves. As one student put it, "getting the courage to meet new people and resolve[ing] new situations and problems… increase[s] your self-confidence" (S9). Another student thought that "if you cope with those challenges you most probably come back home more self-aware and stronger" (S6). Finally, academic and career development was another area where some students thought they had benefited. For one student, the programme was beneficial because:

> "…it shaped my research interest. I wrote my Masters thesis based on my experiences while on mobility in Namibia and I have been able to publish two scientific articles on the subject. The programme also opened the way for me to get a job…because of my experiences in the programme I got hired at the University of Oulu to plan a deeper co-operation programme with Southern African countries" (S7).

One of the biggest challenges on the part of the co-ordinators had been the difficulty of financial accountability and auditing. For example, when it came to buying travel tickets, one of the co-ordinators noted that "the sum on the invoice can be different to what has been earlier agreed with the travel agency…[especially because] on the invoice, there are usually no names of persons mentioned" (C2). As a result, it took time to follow up tickets that were bought, especially through African travel agencies. Furthermore, it was considered that there was a lot of bureaucracy involved in returning money to the project that was used for visitors (C2).

In addition, communication with partner universities in Africa was seen to be another

challenge. This challenge came about as a result of frequent power failures and strikes which hindered the smooth flow of information from Finland to partner institutions in Africa and vice versa. C2 noted that most of the time, it had been difficult to send materials and proposals to partner universities through the internet. As a result, there had been a problem in meeting deadlines. As a way of coping with this problem, materials had been sent with students or researchers going to partner universities in Africa or Finland.

Cultural differences in different countries have been another issue in the IUC programme. This challenge has been mostly faced by female students who had to deal with the Muslim culture of some African countries. For example, female students from Finland on mobility to Makerere had to conform to the dress culture of the people there. Even though this was not considered to be a major challenge, informing the female students well in advance about the dress code proved helpful, as it gave them time to prepare before departure. For the African students, the major challenge was in dealing with the cold weather. Just like the Finnish students, the African students were also informed about weather conditions in advance.

Furthermore, some of the challenges faced by Finnish students while on mobility directly connected to their studies and included insufficient books, frequent power cuts, low internet connection speeds, noisy and insufficient learning spaces. One of the Finnish students explained that in a class of almost twenty people, there was just one textbook, to be used by everyone. Whilst doing group assignments, his group had to wait for the other groups to finish with the lone textbook. Again, because of limited space, his group had to do their assignment outside, which was noisy (S16).

Related to the issue of books was the issue of gaining access to the library. One of the Finnish students noted that "the whole procedure of going to the library stressed me out…you have to go through some kind of check up like an airport security check" (S15). Furthermore, S15 noted that while in the library, it was frustrating looking for books because there was no database to check available books and the librarians sometimes did not know if they had certain books or not. This concern was also expressed by some of the African students who noted that after their brief stay in Finland, one suggestion for their universities back home would be to stock up-to-date books and reduce the protocol in the libraries (S12, S13, and S14). For the African students, the most challenging aspect directly related to their studies was coping with the individualistic nature of studies in Finland, unlike the model of working in groups to which they had been accustomed.

Suggestions for African higher education institutions

It is worth noting here that the findings presented in this paper, except the suggestions for higher education institutions in Africa, are taken from Eta (2012). International student mobility is seen as one of the most important aspects of the internationalisation of higher education (World Migration, 2008). Revenue from international students is seen as a major source of revenue for universities in developed countries and these universities have developed "complex market structures to sustain this source of revenue" (Rizvi and Lingard, ibid). Most governments are designing market-based policies aimed at making universities more attractive, effective, efficient, innovative and productive than ever before (Dill, 2003).

According to one UNESCO (2006) report, students from sub-Saharan Africa are the most mobile in the world, with one out of every 16 students studying abroad. According to this report, several countries in the region have more students abroad than at home. This high demand for international education by African students has been blamed on external policies of IMF and the World Bank in the 1970s that prioritised primary education at the expense of secondary education (Brock-Utne, 2003). Such policies have resulted in limited access or limited capacity at home (World Migration, 2008; UNESCO, ibid) and poor quality of instruction (UNESCO, ibid). The high level of student mobility from sub-Saharan Africa is also attributed to the quest for knowledge and skills that are in line with labour market demands (UNESCO, 2012).

Research shows that student mobility to Africa is very limited. While most students from Africa prefer to study out of the region, the trend is changing, especially for students from the Southern Africa Development Community (SADC). According to UNESCO (2012), South Africa has emerged as a regional hub for world class study and it has become the preferred destination for mobility for students from SADC. The question here is how can other African countries become attractive destinations for student mobility in this current period of globalisation, where every institution, country and region is developing policies aimed at attracting international students (Rizvi and Lingard, 2010). Lessons learned from the IUC programme in student and staff mobility, as the case of Finland and universities in Africa, can be an opportunity for universities in Africa to develop better ways of planning, attracting and receiving international students. These suggestions are practical aspects that, if taken into consideration, can make a big difference.

While on mobility to an African institution, it was observed that due to strike action by teachers, all local students were sent home and only the international students were left on campus. According to one of the Finnish students, this created a feeling of frustration because she did not get the chance to interact more with local students, as she would have loved to interact more. In her words "it was frustrating because it was like studying in Finland with Finnish students and other European students or students from the west" (S15). This paper does not suggest that teachers should express their grievances by not going on strike; rather it suggests that teachers' grievances can be settled in time to allow international students on mobility to fully explore the opportunities created by the IUC programme.

Furthermore, it should be noted that while most universities and teachers in particular attempt to respond to internationalisation by integrating an international dimension into their teaching, it should also be remembered that local perspectives and local voices are important. One of the Finnish students expressed her frustration thus "I went to Africa to understand development issues from an African perspective; instead, I was presented with a western perspective of development which I can say I am more familiar with…." (S15). Contrary to this student's experience, another Finnish student on a law and human rights programme thought that "what made my studies there more interesting was the fact that I got to understand issues of law and human rights from an African point of view where local tradition and customs interfere with legal laws" (S16). For this student, what made it even more exciting was the fact that he interacted with students with disabilities in class and through their discussions and group presentations; they brought in evidence from their everyday lives and personal experiences, which supported notions discussed in

lectures. By constantly remembering that the African context is important and integrating it in their teaching, I think that the whole mobility trip to Africa will be more appreciated and worthwhile.

Student tutors are an indispensable group when it comes to helping international students adjust to their new learning environment. While all the African students on mobility to Finland said that adjusting to the new way of life, the weather, and learning environment was made possible by student tutors, Finnish students, on the other hand, did not get student tutors when in Africa. Even though the international student office or some of the teachers and administrators supported the Finnish students while on mobility to Africa, according to one of the students, "it is not the same as having a student tutor" (S16). Another student noted that, "student tutors would be great - it's an easy thing to arrange but it would make all the difference" (S8). It can be argued that student tutors are not really necessary because international students interact with local students in class or out of class. But I argue here on the basis of personal experience that the experience is still not the same as having a student tutor assigned to international students with the responsibility of helping them adjust to the new learning environment. It could be that recruiting student tutors might be expensive for universities in Africa. However, these student tutors can be compensated in other ways, like getting extra credits.

Making adequate arrangements in terms of lecture halls and textbooks can be another way of reducing the learning difficulties faced by international students while on mobility to Africa. Due to limited space, one Finnish student noted that his group had to do "group assignment outside which was noisy and made concentration impossible" (S16). In addition to the issue of space was the issue of limited textbooks. According to S16, in a class of almost twenty people, one textbook was available for use. According to this student, the time that was used waiting for the book was almost equal to the time that was used in doing the assignment.

Conclusion

The aim of this paper has been to understand the criteria used by Finnish institutions in selecting African partners for co-operation. This paper also examines the rationale for participation in the programme by students, staff and institutions. The focus has also been on the benefits and challenges faced from the perspectives of co-ordinators, students and staff. Based on the findings, suggestions on how higher education institutions in Africa can become more attractive for student mobility have been made. These suggestions have been made on the basis that the experience of students can be an important factor when it comes to influencing other students in making decisions about choosing destinations for student mobility.

The main limitation of this paper has been the relatively small sample size and the fact that no data was available from any university institution in Africa on the motivation for taking part in the programme and the challenges faced while hosting international students. The results presented as motivations and selection criteria at the institutional level have been mainly from the point of view of two Finnish co-ordinators: one through face-to-face interview and the other from data used in the 2009 evaluation of the North-South-South higher education programme. Based on the limitations of the data, no generalisations can be made. However, even with the small sample size, the study has generated an enormous

amount of useful information that can help universities in Africa rethink the strategies that can help international students adjust to their new learning environment and help curb the difficulties faced by international students.

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From North-South to North-North-South-South
An example of two networks interacting – pedagogical aspects

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Abstract
A Nordic university network, NOVA, consisting of agricultural, veterinary and forestry universities, and faculties and departments from all Nordic countries, has established itself as an important agent in graduate student education. The SoilSoc network within NOVA has organised several successful courses. Perhaps the most innovative of these was the course *Sustainable use of tropical soils*, which took place in Ethiopia, in 2010, the first NOVA course outside the Nordic countries. The course was attended by Nordic and Ethiopian students and teachers. In 2012, the course will be arranged again, this time with additional participants from Ethiopia, Zimbabwe, and South Africa, thanks to Finnish CIMO North-South-South network funding. This essay reports on the pedagogical approach taken on the course and its implementation.

The Nordic NOVA university network consists of agricultural, veterinary and forestry universities, and faculties and departments from all Nordic countries. The fees that members pay are used to support international intensive graduate courses (M.Sc. and Ph.D. levels) on which NOVA students have priority, but others are welcome. Funding applications are processed via NOVA networks. In 2006, we established a network, Soil and Society (SoilSoc) to promote teaching and interaction in soil related sciences, with an emphasis on high-quality science and its importance to society.

The SoilSoc network (www.soilsoc.is) has organised several successful courses. A particularly groundbreaking one was the course *Sustainable use of tropical soils*, taught in Ethiopia, Hawassa, in 2010, the first NOVA course outside the Nordic countries. Nordic as well as Ethiopian teachers and students took part, learning from lectures, discussions, excursions, and group work. In 2012, *Sustainable use of tropical soils 2* was arranged in much the same way as the first course, with partly the same enthusiastic local and Nordic crew as before. This year, however, we have additional funding and participants, thanks to a Finnish CIMO North-South-South network encompassing Finland in the north, and Ethiopia, Zimbabwe, and South Africa in the south.

These networks strengthen the collaboration in research and graduate education that already exists between Finland and Ethiopia, and involve in addition to the intensive course, teacher and student exchange and curriculum development in the south. In this essay, we try to open up the pedagogical framework used in the intensive course, how this was implemented, and what the outcome was.

The Soilsoc intensive course
The aim of the course was to give a multidisciplinary overview of use, destruction, and rehabilitation of tropical soils in an authentic setting. The pedagogical approach taken

was problem-based learning (PBL), with a multitude of hands-on experiences in a multidisciplinary setting. The learning was based on reciprocal interaction and partnership among students and teachers from north and south, facilitated in a permissive social learning environment. Not only the Nordic students, but also the SoilSoc teachers saw this course as a chance to learn about the tropics. The course was intended to maintain and deepen partnerships between NOVA and the tropics. Therefore, we involved several local teachers with knowledge of tropical ecosystems, and addressed not only scientific matters, but also socioeconomic aspects of sustainable soil use.

The SoilSoc network combines soils with social aspects of soil quality and use. Our Summer School courses have so far encompassed *Bioremediation of boreal soils* (2006; the same "crew", though SoilSoc was not officially established yet), *Soil degradation, erosion and restoration* in Iceland (2008 and 2010), and *Microbial N transformations and NO/N2O emissions* (relating to global change, Ås, 2009).

The biggest challenges in our field are in the tropics. Therefore, we wanted to have a course on tropical soils. There is no other sound way of teaching about sustainable use of tropical soils than organising the course in the tropics. Our network members have partnerships with Ethiopian colleagues, and the course benefitted from those. The multidisciplinary approach of our network is based on partnership, and so is the official political development agenda in our countries. Through this course, we hoped to educate members of the scientific community to learn how to solve diverse problems globally and locally.

In Finland, there is a lack of education aiming at this goal. Thus, the course filled a gap. In all Nordic countries, we need experts who know not just their own field of specialisation, but in addition understand the socioeconomic challenges in natural resource utilisation, to be better prepared to develop scientifically solid and sustainable solutions in collaboration with southern partners.

On the course in Hawassa, there were 21 Nordic NOVA or joint NOVA-Ethiopia students and 21 Ethiopian students, making 42 students in total. Seven Nordic teachers (one student was also a teacher) representing, Iceland, Norway and Finland were present. Eight Ethiopian teachers contributed. A course secretary was responsible for practical issues before and during the course as a course secretary. The main organiser was in charge of funds and pedagogy.

The course setting was aimed at facilitating intensive interaction between students and teachers. The local organisers did an excellent job in providing good facilities for teaching, coffee breaks, lunches, and dinners. The get-together-parties at the beginning of the course and the last evening thereof were very memorable. The large Ethiopian lunches and dinners ensured that there was enough time to be social and to get to know peers. Even though the program was on a tight schedule, we also organised time for bird and hippo watching and some local sightseeing in Hawassa.

The course programme and working procedures

The course programme consisted of lectures, excursions, discussions, and group work (Table 1). We had 5.5 lecture days, 4.5 excursion days, and 2 travel days. The lectures were aimed at

giving theoretical and background information about the course topics. They also prepared the students for the excursions and gave basic information to be used in the groups. The excursions took us to diverse places with the aim of showing both culture and research (Addis), education (Wondo Genet), the Great Rift Valley, erosion, ecosystem restoration, and functioning agroforestry systems. They were planned to complement, open up, and illustrate the theoretical part of the course. The last day in Addis (the buffer day) was devoted to either further scientific interaction and/or tourism.

We used the Moodle learning environment at the University of Helsinki for course materials. The pre-course assignment was presented in the Moodle. It was loosely formulated, but there was ample material on the course website for the interested student. There was also an opportunity to present questions for the teachers to be dealt with during lectures. Unfortunately, this option was not fully utilised. Before the course teachers put materials (articles etc.) into the Moodle, and the Nordic students were asked to bring the material with them to Ethiopia. Unfortunately, the internet connections in Ethiopia were very slow, so the Moodle was not properly applicable. Instead of each student having continuous access to the site, only certain students regularly uploaded material from the site and distributed it to the others. After the course, the lecture handouts were also put into the Moodle. A wiki environment coupled to the Moodle was set up for the group work. Because of the internet problems, however, it could not be fully utilised.

At the beginning of the first lecture day in Hawassa, study teams were formed according to the learning interests of the students. Thus, the groups were formed in such a way that the group was geographically diverse but formed around a joint interest. The main task of each team was to formulate a problem and to advise solutions to the problem. At the end of each lecture day there was group work. The group work had two aims; 1) To discuss "what did we learn today" and to formulate a couple of questions based on the discussion to be presented and discussed the next lecture morning; 2) Discuss the group work and plan for the final report.

The idea behind this working procedure was to mimic situations northern and southern experts will face when working in an international setting. The common way of approaching development problems is to come from the north with a ready-made solution for the south. By doing so, the northern experts think they know both the problems and the solutions, and may thus fail to take the expertise and knowledge of the end-users into account.

Expected learning outcomes

The expected learning outcome of the course was an increase in the awareness and understanding of the complexity of the problems related to the food crisis and climate change, and how "soils and society" were related to those. On the other hand, we aimed at making students realise that there are ways of solving these problems and that their expertise is relevant. The second aim was thus to practise solving the problems and demonstrate how this could be done. The third aim was to practice working together in an international and culturally and academically diverse environment. The importance of working together, of forming a community of practice (Wenger 1998), was emphasised as a learning outcome, and the final report delivered was expected to reflect this fact.

Pedagogical approach
The pedagogical approach taken was Problem-Based Learning (PBL), which is defined by Finkle and Torp (1995) (ref. ETE Team 2012) as "a curriculum development and instructional system that simultaneously develops both problem solving strategies and disciplinary knowledge bases and skills. It places students in the active role of problem solvers confronted with an ill-structured problem that mirrors real-world problems". Specific tasks in a problem-based learning environment include:

1. Determining whether a problem exists
2. Creating an exact statement of the problem
3. Identifying information needed to understand the problem
4. Identifying resources to be used to gather information
5. Generating possible solutions
6. Analysing the solutions
7. Presenting the solution, orally and/or in writing

Implementation
The course was designed in learning oriented and collaborative mode. Teaching methods were chosen to direct class dynamics and students' learning towards a cooperative mode. The implementation in practice was designed to follow the Biggs' hierarchy of learning, where the motivation was promoted by exploiting elements from research-based learning (Biggs 1999). The pre-course assignment, lectures, excursions, and teamwork were followed by shared discussions, resulting in a clearly constructive course implementation.

Determining whether a problem exists
The course announcement already carried a message about problems with soils in the tropics that need to be solved. Thus, the students who attended the course can be assumed to have had an awareness of not just one but many problems in Ethiopia.

Creating an exact statement of the problem
The pre-course assignment was intended to help students start identifying problems.

Pre-course assignment:

- Please get acquainted with the literature and links below before the course. Use this information when starting to develop the problem for the final assignment.
- Add questions to the "question box" (number 5 below).
- Think about your own country: What does sustainable use of soils mean in that context.

The major part of the study literature assigned was the Millennium Ecosystem Assessment (2005) reports on biodiversity, human well-being, desertification, water and the synthesis document of it. In addition, there were several other links to information sources and papers on soil fertility, nutrient balances, carbon stocks, and climate change.

Study teams were formed at the beginning of the first lecture day in Hawassa. At the end of each lecture day, group work was done in teams. The groups were formed in such a way that they were geographically diverse but formed around a joint interest. The group work had two aims; 1) To discuss "what did we learn today" and to formulate a couple of questions based on the discussion to be presented and discussed the next lecture morning; 2) Discuss the group work and plan for the final assignment, which was to be produced as a written report. Thus, the final assignment was the result of a teamwork process during which the study team formulated a problem and devised ways of solving it.

The idea behind this approach was the observation that northern experts often propose solutions to problems in the south without understanding the problem. By having southern and northern experts discuss together, they could understand each other, learn from each other, and together produce solutions that are more viable. The aim of the assignment was thus not primarily the end product, but rather the process of producing it. It was the backbone of the learning process.

Identifying information needed to understand the problem
Teachers and students were instructed in learning and teaching methods, and were also guided via links to PBL internet sites before the course.

Instructions for students:

> "Learning. The pedagogical approach of the course is problem based learning (PBL). This means that we all try to solve problems together when learning about the tools needed to do so. When thinking about the theme of the course, 'Sustainable use of tropical soils', the problems can be manifold and the topic can be approached from different angles. One important component of PBL is *group work*. The course consists of an excellent group of students for the learning outcome – all of you come from different countries and represent diverse disciplines. The groups will thus be formed to take advantage of this diversity. The *final assignment* defines the aims of the course – learning to see and define problems and working together with different experts on the solution. Further instructions about how to do it will be given during the course. *Before the course* we hope you have time to look at the pre-course assignment documents, bearing in mind the pre-assignment questions. Try to grasp the essence of each paper given. You may write something down, but we are mainly going to deal with this part of the course in the form of discussions. Please also download all teaching material documents (or print them out) and bring it with you to the course. Please feel free to ask questions about the course at any time!"

The initial learning environment was thus the home university. During the course, we had a lecture room equipped with audio-visual facilities for slide and video shows. Group work took place mainly outside, during the coffee break, in a café, under a big fig tree, in hotel lobbies, or similar venues. The excursions were guided by local experts and followed a pre-determined format planned for by the local teachers.

Identifying resources to be used to gather information
The aim of instructions to teachers was to help them structure their work. We had several teachers per theme, and it became a challenge to encourage them to work together, and to

find a joint pedagogical aim for each day before the course in order to compose good and stimulating sessions.

Instructions for teachers:

> "*Teaching*. The pedagogical approach of the course is problem based learning (PBL). This means that we all try to solve problems together when learning about the tools needed to do so. When thinking about the theme of the course, 'Sustainable use of tropical soils', the problems can be manifold and the topic can be approached from different angles. One important component of PBL is *group work*. The course consists of an excellent group of students for the learning outcome – they come from different countries and represent diverse disciplines. The groups will thus be formed taking advantage of this diversity. The teaching is, according to our program, built around specific themes, one per day. For each theme, expert teachers are assigned. Please contact in advance the teachers involved in your theme! It is up to the theme teachers to plan the use of the day. We should have lectures, but it is advisable to also have discussions and exercises, especially with the PBL method in mind. Assign at least some time at the end of the day for this. *At the very end of the day*, we are in addition going to take 30 minutes for discussions in the groups about how the learning outcome of that day relates to their specific problems and their solution. A very important learning environment of the course is the country, the place we are in; make use of that. If you want the students to study something before the course, please upload files under the *pre-course assignment* heading. Alternatively, send the materials to Helsinki. The same is true for other kinds of teaching material that you want the students to have during the course. The *final assignment* defines the aims of the course – learning to see and define problems, and working together with different experts on the solution. Further instructions about how to do this will be given during the course. Please feel free to ask questions about the course at any time!"

Note that the instructions given to the students and the teachers were fairly similar. This approach emphasised that teachers and students were collaborators, and that they could all learn from each other in order to achieve the course aims.

The teachers of each day were asked to collaborate in structuring the lectures of the day. Even though we encouraged them to be interactive, the lectures given were often quite long and tiresome for the students, and there was also some overlap; this needs to be corrected in the future. There is room for pedagogical development.

Generating possible solutions

The students worked hard on their final reports. In the groups, they divided tasks among themselves and then shared the knowledge during their team sessions. They also incorporated knowledge gained during lessons and excursions. In addition to working during the time in Hawassa, the groups continued working at home, using relevant information resources.

Analysing the solutions

The students often involved themselves in vivid discussions about the various solutions they formulated. The discussions sometimes also reflected political issues in Africa, such

as environmental and science policies. A very important component was the cultural and socioeconomic aspects that the African students contributed.

Presenting the solution, orally and/or in writing
The final assignment of the course was the written report. One team member was chosen by the group to serve as the "chief editor", who submitted the report to the main teacher.

The final reports written by the students had the following titles:

- Food security situations among the Borana Pastoralists in Southern Ethiopia – A literature-based problem assessment and proposed mitigation measures
- Soil erosion in agricultural systems
- Nutritional problems and their management in common tropical soils
- Soil acidity and denitrification – problems of Ethiopian soils and their management strategies
- The constraints of using rhizobia biofertiliser in field conditions in Ethiopia and the possible solutions
- Sustainability of soil management practices in the tropics
- Soil and water conservation in Ethiopia: Problems and solutions
- Challenges on use of fertilisers by farmers in tropical Africa: the case of Ethiopia.

The reports were 16 to 51 pages long, including illustrations and references. They were generally of high scientific quality, though there were differences that could be attributed to the educational background of the students.

Achieved learning outcomes
One expected learning outcome of the course was an increase in the awareness of the complexity of the problems related to the food crisis and climate change, and how "soils and society" were related to these. In their reports, students clearly demonstrated that they had grasped the essence of the problems and their solutions. This is reflected in the titles of the reports.

We also aimed at making the students realise that there are ways of solving these problems, and that their expertise is relevant. The professional approach taken by the students in their discussions and in their written reports shows that they had grown in their roles as students to become junior experts on their respective topics.

The process took place partly via scaffolding (Vygotsky, 1978), which in this context means that the senior experts served as support for the junior experts, both in the groups, and during teaching sessions. Vygotsky defines scaffolding instruction as the "role of teachers and others in supporting the learner's development and providing support structures to get to that next stage or level" (Van Der Stuyf, 2002). The importance of working together, forming a community of practice (Wenger 1998), was also emphasised as a learning outcome, and the final report delivered was expected to reflect this fact. By observing the working groups and their dedication, one could see that the expert roles assigned to the students made them

grow and view each other as experts, independent of background.

Feedback
Course feedback was collected using the e-form (e-lomake) in use at the University of Helsinki. The form can be found at: https://elomake.helsinki.fi/lomakkeet/24555/lomake.html. The form is a combination of a form designed for the AF-UH, and questions demanded by NOVA.

The students (35/42 replied) were overall very pleased with the course, which can be seen in the scores given for the different items asked to be evaluated. To our great satisfaction, they also commented when possible. This open feedback is especially useful for further development of the course. Below are some answers to the open questions:

What were the best aspects of the course?

- Learning to know other people and seeing the problems "in real life".
- The internationality of the students and the teachers was perhaps the most enriching aspect of the course. [The] different backgrounds of the members of the course made the discussions more interesting and wide-ranging. It was very nice that we could learn so much [of] the local information from the teachers and the students. It was also very good that we could travel to Ethiopia, because you can learn so much more when you see [the problem] with your own eyes.
- Students and teachers from different countries and backgrounds. Good atmosphere at the course. Nice environment for the course.
- Learning about the special problems on site and not so much through lectures, combined with a broad supply of background information in the lectures.
- The best aspects were [the course's] practical orientated lecture[s] and creating friendship[s] and group work.
- Having the chance to travel to Ethiopia – seeing in practice what we were learning about, the multi-cultural group.
- [Creating a] good working environment with different Scandinavian universities and professors. To see and learn things "in situ" in Ethiopia. We were able to meet local students and scientists.
- The excursions were excellent.
- The experience of the trip and the course [in general] was very good.
- Field trips.
- Overall practical organisation of the program and pre-course communication [as well as] during the course [was] very nice. The field trip was very nice [and] helpful.
- International group that functioned very well together. Practical topics and field trips. Enthusiastic teachers and organisers.

What were the weakest aspects of the course?

- Long lecture days kept students … exhausted.

- Time was short.
- The program was very tight or [much] work [was] done in a very short period of time. Repetition of some lectures or topics (overlapping).
- The courses were too general … [and needed more] time.
- I didn't see any weak aspect[s] [to] the course.
- I didn´t like that local and foreign people were staying in different hotels. But I understand that it was due to the sponsor.
- Not enough time … to get used to the PBL. Members in group[s] may not all take equal responsibility for the final assignment.
- No weak aspect[s].
- [No] intensive lectures.
- Slight [issues of clarity] with the schedule and prolonging of the lectures leaving little time and energy for the group sessions.
- [None].
- The lack of information shared with the participants considering the schedule and the plan of the day.
- We didn't meet local farmers. We met some of them [accidentally]. We didn't visit local farmhouses.

How would you suggest that the course could be improved?

- More practical exercises and field work.
- The time has to be [at least] 15 days.
- Just like the field trip it would be nice if it includes lab exercise like soil lab, molecular lab etc. It is better to give more time for group discussion or group work and presentation (since it is helpful [for learning] more … If the course will be given Ethiopia in the future, it would be much better if is organised by one responsible person.
- More funding is needed to include world-class teachers who are … relevant to the course.
- The course should be specific [about] some points – time allocated to such training must be sufficient –
- practical activities and demonstrations must be incorporated.
- If possible, in the future try to increase the number of excursions [related] to the course aspects. If possible, please try to incorporate teachers from other tropical countries as well … so that your students will have deep knowledge about tropical soils of different countries.
- Include some laboratory [work] such as testing soil, molecular and microbiology.
- The course should include the real problems of the county where the course is delivered, so that one can give possible information on the methods for alleviating the problems.
- Including more diversified participants hosting the course in various parts of the world like Soilsoc 2010, which was in Ethiopia.

- Relevant material was in short supply esp. on soil chemistry, hydrology and bioremediation. Advanced techniques [should have been dealt with more].
- I feel more time could [have been] given for the groups to discuss, and [to have done this] preferably in the daytime. I understand that the schedule must be tight in order to fill the requirements of the credits, but especially for students [from] outside Africa there was a lot to process and people were quite tired. A little more free time in the evenings would have been helpful.
- I think everything was good, but instead of giving very long lectures it would be nice if there [had been] some brain storming activities in between the lectures, [as] we did for most lectures.
- As far as one way [lecturing is] concerned, time and participant attention should be considered. More time should be devoted [to] discussion. Responsible policy maker[s] should be invited to bear responsibility to governments [as well], not only professionals … [as] professional alone may not be successful.

Would you recommend the course to your friends?

- Yes of course.
- Yes and I can give the address if it is needed.
- Definitely.
- Yes. many.
- Definitely.
- Yes. I [would] strongly recommend this course for friends. Because it [is] really so helpful and taught me [about] working with students of different cultural and educational backgrounds.
- Yes, because I found it [to be] the real method of teaching student[s] so that student[s] can have [an] understanding [of] different problems [outside] of their country.
- Yes. It is excellent course!
- Yes it is very important esp. for PhD students of soil science.
- Yes I [would] recommend [it]. It is [a] very important course.
- It is good course [for learning] different [environmental] and … problematic issues, [and to have the] chance [of working] in groups and [gain a] broad [sense of] learning.
- I will definitely recommend the course if it will be organised again. It offered a unique opportunity to study the topic in authentic surroundings and [to] meet pleasant people.
- Yes, definitely. To have the course in Ethiopia was a great idea to broaden the minds of [people] from Europe as well as to broaden the minds of the Ethiopian people.
- Yes, I would recommend this course to my friends. But it was not [an] "easy course".
- Yes, absolutely! I really enjoyed the course.

It is good to see that most students enjoyed the collaborative work, discussions and brain storming, and the integration of diverse study methods to achieve the learning goals. We fully agree on the criticism directed against lectures that were too long and overlapping. Next time, this problem will be addressed. Another problem noticed by the Nordic teachers was the lack of meeting local farmers, which must be corrected next time. The wish of (presumably African) students to have laboratory work is genuine and shows how much they are in need of technical training. Some students found the working pace hard, which is true, but a necessity – the course is expensive and every minute is valuable. The comments show that many students really enjoyed the cooperative mode of learning. Though some found the PBL method challenging, there was no big criticism of it. In conclusion, the students' problem based learning was based on social constructivism (Atwater 1996).

Additionally, the Nordic teachers viewed the course as a learning event, which will bear fruit in coming courses at NOVA universities. For the course in 2012, both previous and new teachers are lining up to attend.

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Table 1. The NOVA SoilSoc PhD course programme in 2010.
Course Title: Sustainable use of tropical soils

Date	Time	Activity	Teachers*
23.10 (Sat)		Travel to Addis Ababa	All NOVA students and teachers
24.10 (Sun)		Study of Addis Ababa and surroundings. Ethiopian traditional food and coffee. Urban living.	Fassil Asefa, Asfaw Hailemariam
		Visit to the National Museum.	
25.10 (Mon)		Visit to the University of Addis Ababa and the National Soil Testing Centre in Addis. Ethiopian soils and pedology. Research facilities. Production of biofertilisers.	Fassil Asefa, Asfaw Hailemariam Markku Yli-Halla, Olafur Arnalds Leena Räsänen, Åsa Frostegård, Lars Bakken
26.10 (Tue)		Travel by bus Addis-Awassa through the Great Rift Valley. Stops for field studies of soil erosion, pedology, agriculture, botany.	Fassil Asefa, Asfaw Hailemariam, , Markku Yli-Halla, Olafur Arnalds, Leena Räsänen, Åsa Frostegård, Lars Bakken
		Meeting with Ethiopian students and additional teachers. Get-together-party.	Endalkachew Wolde-meskel
27.10 (Wed)	Morning	Formation of study teams and formulation of study aims. Discussion based on pre-course assignments. Ethiopian soils and ecosystems	KL Markku Yli-Halla, Sheleme Beyene, Zebene Asfaw.
	Afternoon	Ethiopian soils and ecosystems	Markku Yli-Halla, Sheleme Beyene, Zebene Asfaw
28.10 (Thu)	Morning	Agriculture: crops, legumes	Fassil Asefa, Asfaw Hailemariam, Endalkachew Wolde-meskel
	Afternoon	Soil microbiology	Åsa Frostegård, Lars Bakken
29.10 (Fri)	Morning	Field trip to Wondo-Genet Forests, agroforestry and agriculture	All
	Afternoon	Recreation	

30.10 (Sat)		BNF	Leena Räsänen, Fassil Asefa, Asfaw Hailemariam Endalkachew Wolde-meskel
		Biofertilisers	Leena Räsänen, Fassil Asefa, Asfaw Hailemariam Endalkachew Wolde-meskel
31.10 (Sun)		Soil erosion	Olafur Arnalds
		Land degradation perspectives Land and water problems in the Rift Valley	Olafur Arnalds, Megerssa Endebu
1.11 (Mon)		Field trip 1	All teachers
2.11 (Tue)	Morning	Socioeconomic aspects of soil restoration	Zebene Asfaw, Worku Tesema, Awdenegest Moges,
	Afternoon	Adaptation of innovations for sustainability	Mila Sell, Awdenegest Moges, Worku Tesema
3.11 (Wed)			
		Field trip 2	All teachers
4.11 (Thu)			
		Travel to Addis	
5.11 (Fri)			
		Free (buffer day in case of traffic problems)	
6.11 (Sat)			
		Leaving Addis	

South – South cooperation

The Primafamed network as an example in creating a network between universities in Sub-Saharan Africa

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Abstract
International studies have demonstrated that well-functioning primary health care organized around family and community health teams is adamant in establishing a cost-effective health system that provides equitable and accessible health services to the entire population. The World Health Report 2008 (PHC Now more than ever) urged health systems worldwide to make a shift to more comprehensive health care. Family and community medicine training is developing in Sub- Saharan Africa but in many countries there still is a long way to go. With a network linking the different training programs in African universities synergies can be established and training programs can get stronger with good quality assurance. With South-South cooperation the partners share experiences and resources and therefore improve the development of the training. Research into the effects on health and civil society of these efforts are equally necessary to provide innovation and documentation to sustain the continuous recruitment of political support, funding and human resources in this quest to construct adequate health services. Examples of already established collaborations within an existing network and the various outcomes with respect to curriculum development, institutional strengthening and advocacy will be presented and new ideas to incorporate research based initiatives will be shared.

Well-trained doctors in the field of primary health care, known as family medicine in many countries around the world, are necessity for improving the quality of health care provided to the community. Especially in developing countries, where there is a big shortage of doctors, it is essential to have doctors with comprehensive knowledge who are able to prevent, stabilize, cure and care for the problems they are encountering. In the past decade many universities in Anglophone Africa have started a postgraduate training program in family medicine. With the help of South – South cooperation, these universities have often used South African universities as examples for developing their own curriculum and training. In this paper we discuss the history of primary health care and the development of family medicine training in Anglophone Sub-Saharan Africa, with the Primafamed network as an example of South – South cooperation.

Family Medicine and Primary Health Care

The health and well-being of a population is highly dependent on a quality primary health care system, which is easily accessible and affordable to all members of the community. This is the foundation of the concept of Alma Ata, "Health for All", which was adopted by the World Health Organization in 1978 (WHO, 1978). Thirty years later, the World Health Report 2008 "Primary Health Care: Now More Than Ever" (WHO, 2008) reformulated the importance of

primary health care and to move health care from tertiary hospitals back to the community. A comprehensive health system based on primary health care has been proven to be cheaper, and to have better overall health outcomes. The World Health Assembly 62.12 urged their member states to train and retain adequate numbers of health workers with an appropriate mix of skills. This approach includes primary health care nurses, midwives, allied health professionals, and family physicians, who are able to work in a multidisciplinary context and cooperate with non-professional community health workers in order to respond effectively to the health care needs of members of the community (WHO, 2009).

The African family physician

Family physicians trained as specialists of common problems are now the norm in many countries. However, family medicine is still a relatively new concept in Sub-Saharan Africa. Further, the "inverse care law" (Hart, 1971) – the fewest health care professionals are found where they are most needed and vice-versa – is still very much applicable to the majority of African countries.

The University of Pretoria was the first African university to open a department of family medicine with the purpose of training specialised primary health care physicians; what we now call African family physicians (Hugo, 2008.). This was followed by all seven Health Science faculties of the other South African Universities. In 1997 these eight departments of family medicine formed a network for communication and consultation. FaMEC (family medicine educational consortium) was established: to share and exchange expertise; to optimise and potentiate one another; to standardize examinations and develop appropriate assessment systems; and to form a core curriculum (Ministerie van de Vlaamse Gemeenschap, 1997).

Other Anglophone countries started providing family medicine training even more recently, and presently the first graduated African family physicians are starting to find their place across health systems in their countries. Family Medicine departments are struggling for recognition, while health systems are still dominated by centralised specialist services and vertical, disease-oriented approaches.

South – South cooperation

African universities have many links with universities in the North. These relationships provide support, research, human resources, etcetera. For many decennia this was the norm, while there were often very little links and cooperation between universities within the African region. From the sixties, when African countries became independent, there have been movements to focus on networking between countries in the South. These movements began the Bandung conference in 1955, where African and Asian country leaders came together to forge links in cultural and economic areas by, and for, the global South (Du Toit, 2011). In 2006, UNESCO defined South – South cooperation as:

> "…a process whereby 2 or more developing countries pursue their individual or collective development through cooperative exchanges of knowledge, skills, resources and technical know-how. Linked by socio-economic and political commonalities the countries of the South have important lessons to share." (Du Toit, 2011)

When discussing South – South cooperation, Prof. Nelson Sewankambo, Dean of the

Faculty of Medicine at Makerere University, which is one of the oldest and most prestigious universities in Africa, being established in 1922, once stated "together we may achieve more than one single institution".

Table 1: North – South cooperation versus South – South cooperation

North – South cooperation	South – South cooperation
Mainly one way Only focused on changing the South Research is happening in the South Funding comes from the North	Two ways Improving both partners, learning from each other Doing joined research at both institutions Funding comes from the North or from other sources

Adopted from Du Toit 2011

As funding in many cases still comes from the North, this often leads to North – South – South cooperation, with the North partner funding the Southern partners in their cooperation, sharing of resources, and joint research.

The Primafamed network

Since 1997 the department of family medicine and Primary Health Care from Ghent University, Belgium, has been working together with several universities in Sub-Saharan Africa to strengthen the family medicine training in different countries; starting with South Africa and later expanding to Eastern Africa. In 2008 the Primafamed project (Primary health care and family medicine education network), which is funded by Edulink-ACP-EU, was developed. The project linked ten universities (Ahfad University for Women in Sudan; Gezira University in Sudan; Lagos University in Nigeria; University of Ghana; Moi University in Kenya; Aga Khan University in Tanzania; Makerere University in Uganda; Mbarara University in Uganda; National University of Rwanda; and University of Goma in DR Congo) in eight Sub-Saharan African countries together with the eight departments of family medicine in South Africa (De Maeseneer, 2010). The objectives of the Primafamed-project were formulated as follows:

- to contribute to the health of communities through accessible, responsive, and quality health systems in Sub-Saharan countries by educating and training family physicians who provide interdisciplinary, primary health care services oriented towards the needs of individuals, their families, and the communities in which they live;
- to plan, develop and strengthen academic departments or units of family medicine that offer family medicine training at the undergraduate and postgraduate levels.
-

The specific objectives of the project were:

- to develop a comprehensive vision and strategy, within the specific context of Sub-Saharan countries, that delineates the integral contribution of family medi-

cine and the primary health care team to an equitable and quality primary health care system; and

- to establish a specific institutional network between departments and units of family medicine and primary health care services.

Each partnering university received funding to employ a local coordinator, to establish one exemplary training site, and to share human resources with the South African universities.

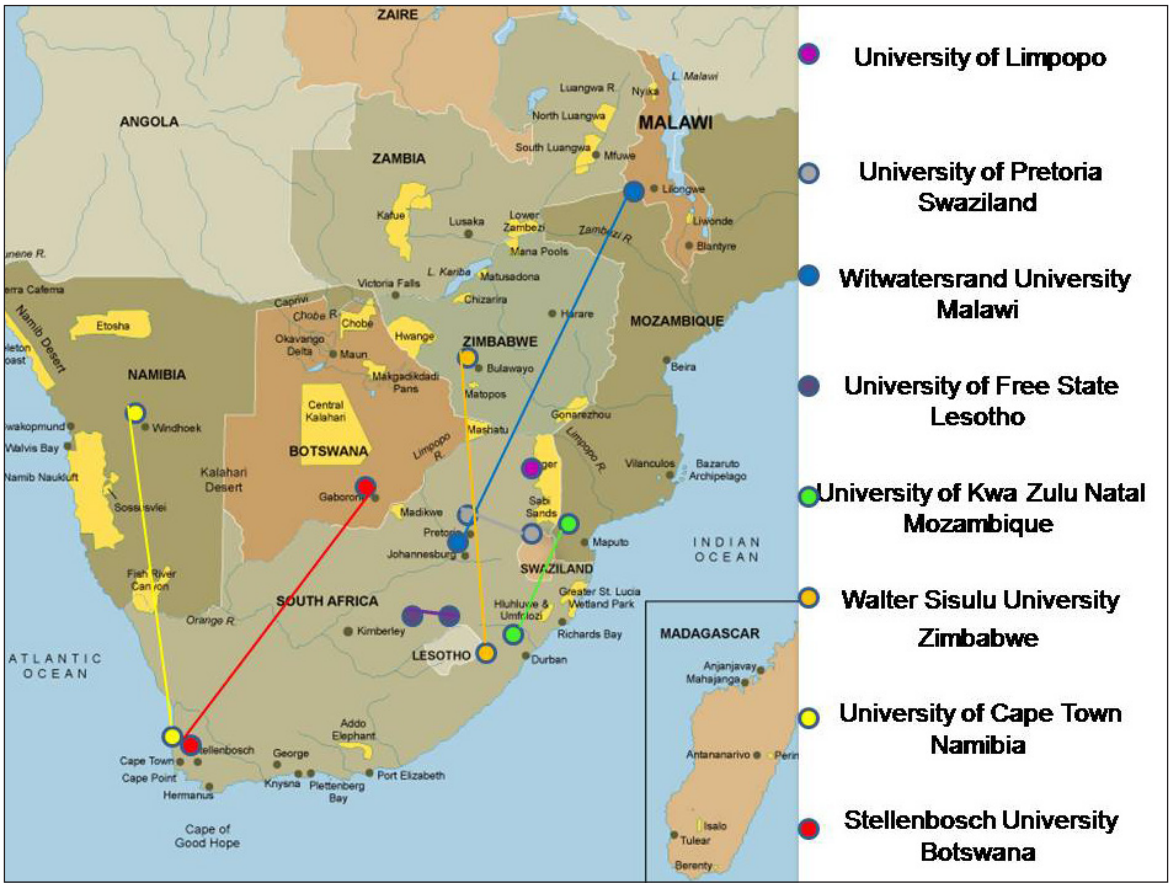
Example 1: Community medicine in the Rwandan family medicine training

The National University of Rwanda began their family medicine and community health (FAMCO MMed) training program in 2008. Two district hospitals were identified as training sites to train the residents. Both district hospitals were based in medium sized cities, with 300 to 400 beds each. In these hospitals the residents were rotating in the different wards with bed-side teaching from FAMCO faculty. In their second year training schedule, 4 weeks were allocated for a community medicine training. Rwinkwavu hospital, a small hospital with just over 100 beds in the Eastern Province, was identified as the ideal situation for this community medicine. The American NGO Partners In Health, which has a lot of community-based programs and research, was working together with this hospital to improve health care in the district. With funding from the Primafamed project, experienced family physician came to work alongside the second year residents on their community medicine rotations. In these four weeks the residents were training in community medicine; they explored several programs that were taking place in the community; and they performed a small quality improvement project together with the nurses from one health centre. This training turned out to be very successful, and has now been integrated into the FAMCO curriculum. After this successful community medicine rotation, Rwinkwavu hospital became the third training site for FAMCO MMed training. The hospital focuses on community medicine. Several of the FAMCO residents are now on full-time rotations in the wards of this hospital. In the fall of 2012, the first FAMCO residents graduated to pioneer as the first Rwandan family physicians.

The first Primafamed conference, "Improving the quality of family medicine training in Sub-Saharan Africa", stimulated on-going discussion on the roles and responsibilities of African family physicians (The Kampala commitment, 2008) (Mash, 2008). In 2009 this led to the Statement of consensus on Family Medicine in Africa at the second WONCA (World Association of Family Doctors) Africa conference with family physicians from all over Sub-Saharan Africa. The consensus statement defined the contribution of Family Medicine to equity, quality, and primary health care within an African context, as well as the role and training requirements of the African family physician (Mash, 2009). While funding for the Primafamed project ended in 2010, the Primafamed network continued to link the departments of family medicine in the different countries together. A yearly Primafamed conference is organised to bring partnering universities together to share knowledge and skills. Several other projects have evolved from the Primafamed project. In 2009 "the Southern Africa family medicine twinning project" began. In this project the eight departments of family medicine in South Africa have each linked themselves to another Southern African country in order to stimulate the implementation and development of

family medicine training through sharing knowledge, experience, and resources.

Picture 1: the Southern African Family Medicine Twinning project partners



From the VLIR-funded Southern African Family Medicine Twinning Project

Since its inception, the Primafamed network has extended to the West African Francophone countries. In 2012 a project began to link Benin and Mali together in the development of family medicine training at their universities. In 2013 the five universities in Uganda will receive funding that will enable them to improve and strengthen their collaboration in family medicine training development, and further develop the integration of family medicine in the Ugandan health care system.

Example 2: Sudanese family physicians

Gezira University is a public university based in central Sudan. It is located in the city of Wad Madani. When the Primafamed project started, family medicine did not yet exist in Sudan. In the many health centers community physicians and medical officers were in charge of patient-care. Together with the policy makers, the district health officers, and representatives from the ministry of health, the need for further training for medical doctors in Primary Health Care was identified. Gezira University decided to develop a one year diploma and a 2 year in-service Msc in family medicine. With the help of the Primafamed project a coordinator for this development was financed, a curriculum was developed, and training sites were identified and equipped with the needed material. In 2009-2010 the first ten medical doctors were trained in a one-year course. In 2010, 120 candidates were selected for the two-year in-service Msc in Family Medicine. In the fall of 2012 these 120 Sudanese family physicians graduated with comprehensive knowledge in district primary health care. For the coming year 200 new candidates will be selected. The university of Gezira can be seen as a perfect example of how working together with policy makers is an essential part of developing family medicine.

Adopted from the Primafamed Edulink ACP-EU final report

The way forward

Incorporating family medicine as part of health care systems throughout African countries is a new idea that still has to find more ground and support. Ongoing collaboration between different universities continues to strengthen the training programs. As mentioned, the Primafamed network organises a yearly conference to bring its partners together to discuss the way forward for the development of family medicine training across the different countries involved. South – South cooperation strengthens the development of family medicine training in all the Sub-Saharan countries. Communication and collaboration with the ministries of health and the policy makers has proven to be absolutely necessary and of utmost importance. Continuous advocacy for the importance of family medicine as a part of the different health care systems is essential. In order to continue this very fruitful South – South cooperation, funding from partner universities in the North or NGO's is needed. This support is required because there is often very limited funding from the universities themselves for research, (human) resources, and meetings.

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Communication as an important component of functional collaborative projects

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Abstract
Research Africa acts as the communication hub for a number of international partnership projects. It is generally regarded that effective communication within knowledge networks and multi-partner projects, together with the reach of new knowledge into the public sphere, is not possible without dynamic communication tools and practice. The multi-disciplinary and inter-continental nature of large collaborative projects requires co-ordinated and streamlined communicative tools to ensure the dissemination of information between internal stakeholders as well as external stakeholders and project partners. This paper therefore seeks to explore a particular case study of the key role that communication has played in contributing towards the success of the CAAST-Net (Network for the Coordination and Advancement of sub-Saharan Africa-EU Science & Technology Cooperation) project. We will also briefly discuss the role that social media applications are playing in changing the way that project partners communicate, and how social media as part of an integrated communications plan can add value to a collaborative project with a diverse group of multiple stakeholders.

In his message to SANORD's annual meeting in 2011, the meeting chairperson, Brian O'Conell, reminded us of Manuel Castells' response to how we could cope with the huge global changes facing us. "Through knowledge and networks" was Castells' reply. The central case study that will be explored concerns how Research Africa has co-ordinated and managed the key functions of communication and dissemination to ensure that the CAAST-Net-project achieves some of its key goals.

Over the 5-year lifetime of this project, Research Africa has learnt a great deal, through missteps and successes, regarding communication within a diverse consortium made up of partners from 23 countries in Africa and Europe, as well as outbound communication and dissemination to CAAST-Net stakeholders and the public. Furthermore, in addition to the standard ways of communicating to the public (via the media and press), or amongst academics, through peer reviewed publications in journals, web tools and social media platforms have taken on an increasingly larger role in terms of alternative vehicles of communication. Research Africa has been able to utilise these innovative communication tools in order to contribute towards the overall success of the CAAST-Net and other projects.

About CAAST-Net

The CAAST-Net project is a five-year joint Africa-Europe network project dedicated to advancing bi-regional cooperation in science and technology. Research Africa joined the initiative as one of the initial 18 partners, and is responsible for managing the work package relating to knowledge management, and communications tools and support. Research Africa has a dedicated editorial team, which creates, publishes and disseminates CAAST-Net publications. These include the quarterly *CAAST-Net Bulletin* and monthly issues of *The*

Network newsletter.

In particular, Research Africa manages the CAAST-Net website (http://www.caast-net.org), which is a growing and dynamic repository of information on the project, as well as the regular communication to and amongst partners, to stakeholders, and other IncoNets.

The Joint Africa-EU Strategic Partnership, endorsed at the December 2007 Summit in Lisbon, Portugal, is a political vision and roadmap for future cooperation between the two continents in existing and new areas. Cooperation between Europe and Africa in the field of science and technology, with its long and multifaceted history, is one of the pillars supporting the increasingly diverse relationship between Africa and Europe, and is a strand running both explicitly and implicitly through the joint strategy and its first action plan.
Against the background of a global consensus that indigenous capacity in science and technology is an essential pre-requisite to economic competitiveness, sustainable development, and poverty reduction, the Network for the Coordination and Advancement of sub-Saharan Africa-EU Science & Technology Cooperation (CAAST-Net) has been developed as a high-level platform, financed by the European Union's Seventh Framework Programme (FP7), to advance international cooperation between Europe and Africa for mutual benefit.

CAAST-Net's goal is an increase in the quality and quantity of bi-regional cooperation in science and technology between Europe and Africa, targeting areas of mutual interest and benefit through greater use of instruments under the FP7 framework, as well as through other instruments of international cooperation, and through lobbying for greater synergy between R&D and development instruments.

In support of its goal, CAAST-Net has a range of activity clusters, aiming:

- To support and inform existing Europe-Africa S&T policy dialogue and cooperation processes.
- To identify and prioritise common research areas of mutual interest and benefit, especially for inclusion in the thematic priorities of the FP7 Cooperation Programme, harnessing cooperation to address specific problems faced locally and regionally within Africa, as well as common problems of a global nature.
- To promote synergy between Europe-Africa S&T partnerships and development cooperation instruments in order to enhance the creation and application of new knowledge in support of achieving the MDGs, poverty alleviation, and economic growth.
- To undertake specific activities dedicated to strengthening of the participation of African countries in the Framework Programme through a series of events aimed at raising awareness, providing information, brokering partnerships, and optimising synergies.
- To monitor the performance and impact of Europe-Africa S&T co-operation under

the Framework Programme to inform future cooperation policy.

At this stage of the project (May 2012), there are currently 26 organisations from 23 countries in Africa and Europe that form part of the consortium. These organisations include universities, government ministries, as well as private entities across both continents.

Communication goals for the CAAST-Net project

With a diverse and multi-disciplinary team of project partners, it was immediately clear that Research Africa had to develop an information and communication system that would streamline and facilitate both internal and external communication. The key goals for the communication work package of the project were to:

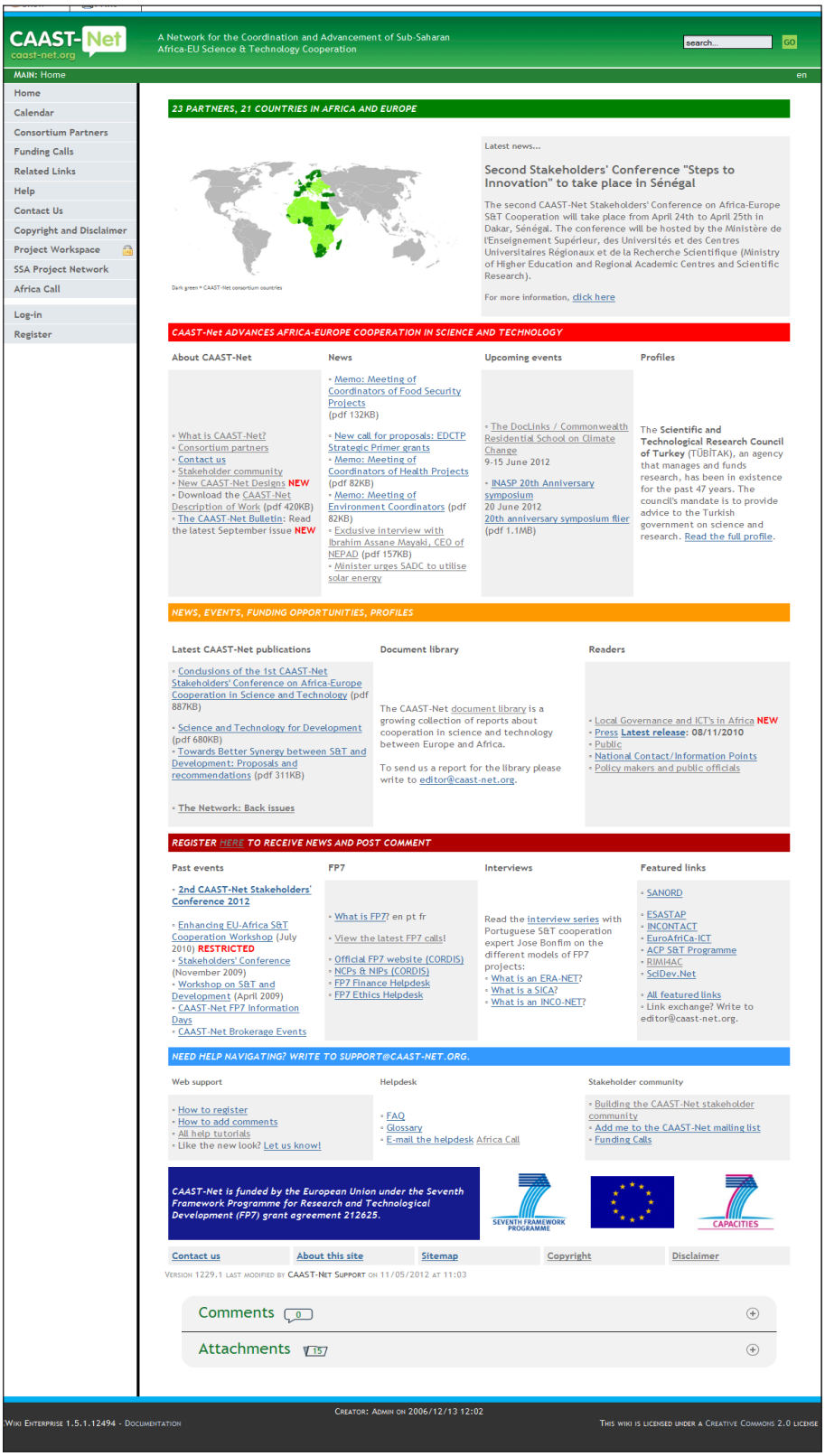
- Put in place and refine a communication and dissemination system that will ensure that the information about the project is accessible to both the broader European and African public
- Become the prime and secure source of internal communication and project information for the CAAST-Net consortium
- Reduce the need for numerous and lengthy multi-recipient emails
- Negate the need to email large documents with several attachments
- Provide improvements in the ability of the project management team to effectively communicate with the consortium
- Securely store and retrieve several hundreds of files that are generated by the partners during the life-time of the project.

Some of the initial communication challenges that were presented to us early on in the life of the project were related to internal communication between the various project partners. Partners were being deluged on a daily basis with numerous e-mails with multiple attachments, which resulted in many participants either ignoring or simply not responding to e-mail communications. As such, it was later agreed that project partners would receive customised e-mail alerts every 2 to 3 weeks with sufficient time provided for feedback and responses by partners. Immediately, the participation rate improved and this resulted in a quick turn-around time for decisions to be made and implemented by partners.

In order to facilitate external communication, a CAAST-Net Editorial Board was established. The role of the Board was to ensure that all communications to the public about the project and its aims were accurate, of a high quality, and free of perceived political or regional bias. This was particularly important, as the project was a joint AU/EU collaboration and the sensitivities with regard to the tone and manner of the communications had to be taken into account to ensure that a cordial and professional working relationship was built up with the various partners.

Early on in the life of the project, a website was established to serve as a central information hub for all project activities that all partners and external stakeholders could access at any time across the globe. The website was set up as www.caast-net.org

Figure 1: Screenshot of www.caast-net.org homepage.



The website was set up with both an intranet aspect (for internal communications) and a public internet face, which was visible to the online public (for external communications).

As the consortium partners ranged from a wide variety of countries, with various languages, English was adopted as the main language of communication. However, in order to ensure that all partners were able to engage with the website contents in a language that they were familiar with, we added *Google Translate* to the website.

Google Translate is a free translation service that provides instant translations between 58 different languages. It can translate words, sentences, and web pages between any combinations of supported languages. With *Google Translate*, we found that the information contained on the CAAST-Net website was more universally accessible and useful, and not necessarily limited to those who were able to read English.

Communication tools between the project partners

In a diverse and multi-partner project team based at different institutions throughout Africa and Europe, perhaps one of the most significant challenges for the Research Africa co-ordination team was to ensure that the communication between all of the partners (including the funders, editorial board, and regional colleagues) proceeded in a conducive manner that ensured that the key deliverables of the project were met. A key point for ensuring the success of internal communications as proposed by Research Africa was to proactively enforce its use. Moreover, in setting up the intranet, the objective was not only to provide a restricted access space for project partners, but also to provide collaborative utilities, allowing each partner to contribute directly to the intranet. It was agreed upon at an early stage in planning of the project that the intranet (See 'Project workspace' navigation panel section of the website) would be the only major internal communication route for the consortium. After several years of the project having been established, the utility of the system is nearly universal from all partners in both Africa and Europe, despite the challenges of intermittent connectivity from some African countries.

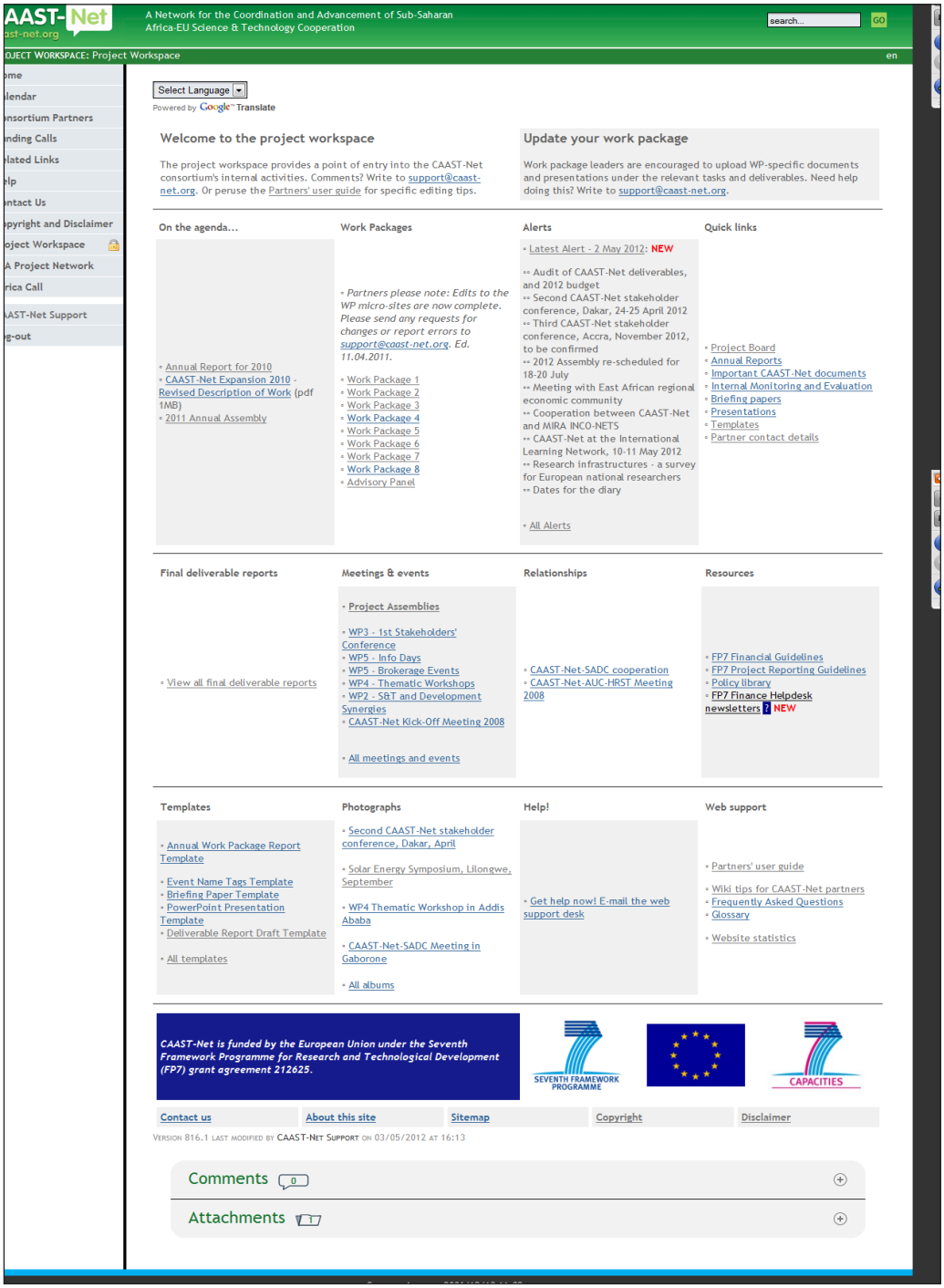
For communication between the various partners, in addition to the standard methods of communication (e.g. telephone calls, virtual "GoToMeetings", Skype calls, and reports/memos, etc.), Research Africa incorporated many of the new Web 2.0 social media tools to assist with the enhancement of communication. These tools included the setting up of a CAAST-Net Linked-In group. In order to streamline the communication processes, the intranet section of the CAAST-Net page was created as a repository for information that was needed to be shared between partners. For added security and to protect the data, this particular section of the website was password protected, and access was granted to partners based on their management level of the project.

Furthermore, to facilitate the participation of the various participants in the project, different tools and functionalities were made available via the website, such as mailing lists, alert systems, and bulletin/discussion boards. Research Africa has a webmaster that manages the website and ensures that the security and integrity of the site is maintained. The webmaster liaises closely with the project co-ordination team to ensure that the website is kept updated regularly and timeously. Stakeholder meetings, conferences, and all relevant events are advertised via the website and registration details are captured onto the secure section of the website. Moreover, a Customer Relationship Management (CRM) system has been activated that allows for the webmaster to set up communication templates that contain basic coding to ensure that communications can be sent out to the relevant target audience

with greater ease and flexibility. Each contact on the CRM system has been prepopulated with the key contact and supporting criteria to streamline ease of access in terms of targeted communication. This system is web-based and set up via Open Networks.

All the functionalities of the website are explained through a Question/Answer topic "FAQ" to inform the partners about how they can maximise the many features and benefits of the intranet. There is also a formal helpdesk, which Research Africa maintains in order to assist partners with any queries or questions regarding usage of the website platform.

Figure 2: Screenshot of Project Workspace section of website.



External Communication

The main objective of the CAAST-Net website interface is to disseminate information to several stakeholders in the project, including the general public, policymakers, as well as the research and scientific communities in Africa and Europe.

Various stakeholder conferences have also been held in both Africa and Europe in order to ensure that the virtual exchange of information is supported by various stakeholder engagements between the African and European partners.
Each event in the project workspace section can be linked to a workspace dedicated to giving information about the attendees, the agenda, the presentations, the report, and any document concerning the event. Each workspace is managed by the meeting co-ordinator, and access is restricted to members of the relevant group. The common documents produced in the frame of the CAAST-Net project are stored under the document library section of the website.

All the information dedicated to the public aspects of the website has to be validated by the project co-ordinator and approved by the Editorial Board. Whilst this process is a distinct advantage, it does pose certain challenges in that the Board decision(s) can sometimes take an inordinate length of time, which can delay the communications being uploaded or disseminated via the website. However, this process is indeed necessary to ensure the quality and relevance of the information being uploaded by the webmaster.

To ensure the security of the website, it is installed on a dedicated server and protected by a firewall and anti-virus software.

It is important to bear in mind that in the communication services, brand and design are very important. To develop a project face representing both the participants (i.e. partners and other stakeholders) and the public, a logo and layout were produced using a professional graphic design team. The website layout was designed to be clear and simple, yet aesthetically appealing in order to invite/drive visitors directly to the main topics on the website, and to facilitate the quick downloading of the web pages. This is particularly important in the African context, where bandwidth can be inconsistent; therefore, optimising the website for low bandwidth usage will be beneficial.

In the top right hand corner of the homepage, a Google search tool allows web browsers to easily find what they are looking for on the CAAST-Net website.

From the top menu, visitors can access the project homepage, showed in Figure 1. The main frame displays a short description of the project. In the left menu of the project homepage, the topic “About Us” gives the visitor an overview of the objectives to be reached by the project. There is also a brief description of each partner, the latest issue of the CAAST-Net bulletin, as well as details of the stakeholder community. Furthermore, news, forthcoming events, and specific details of stakeholders (including funders) are outlined on the homepage.

The key issue of success for the website is the supply of relevant information. Research Africa works closely with the project partners, the co-ordination team, and the Editorial Board, and engages with the general public via social media platforms.

To evaluate the frequency of access to the CAAST-Net website, Google Analytics was used to monitor key metrics with regard to www.caast-net.org As is indicated in Figures 3a & 3b (below), some interesting overviews in the form of graphs and maps have been generated in order to monitor the various metrics. On average, 4,815 page views a month were counted over the past 3 years of the project. A substantial total of 158 887 page views have been record thus far. The largest share of visitors came from South Africa, followed by the United Kingdom, Germany, USA, France, Belgium, Kenya, Finland, Spain, Portugal, Egypt, and Senegal.

Figure 3a

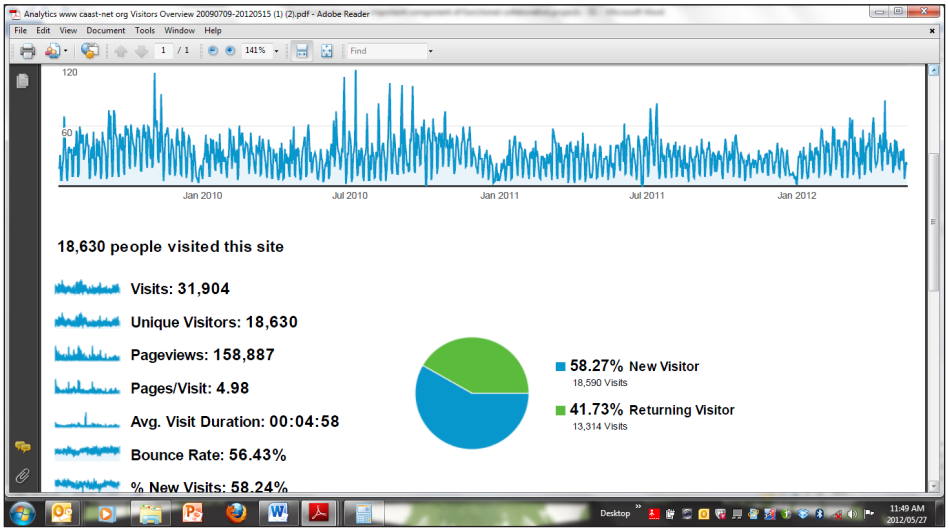
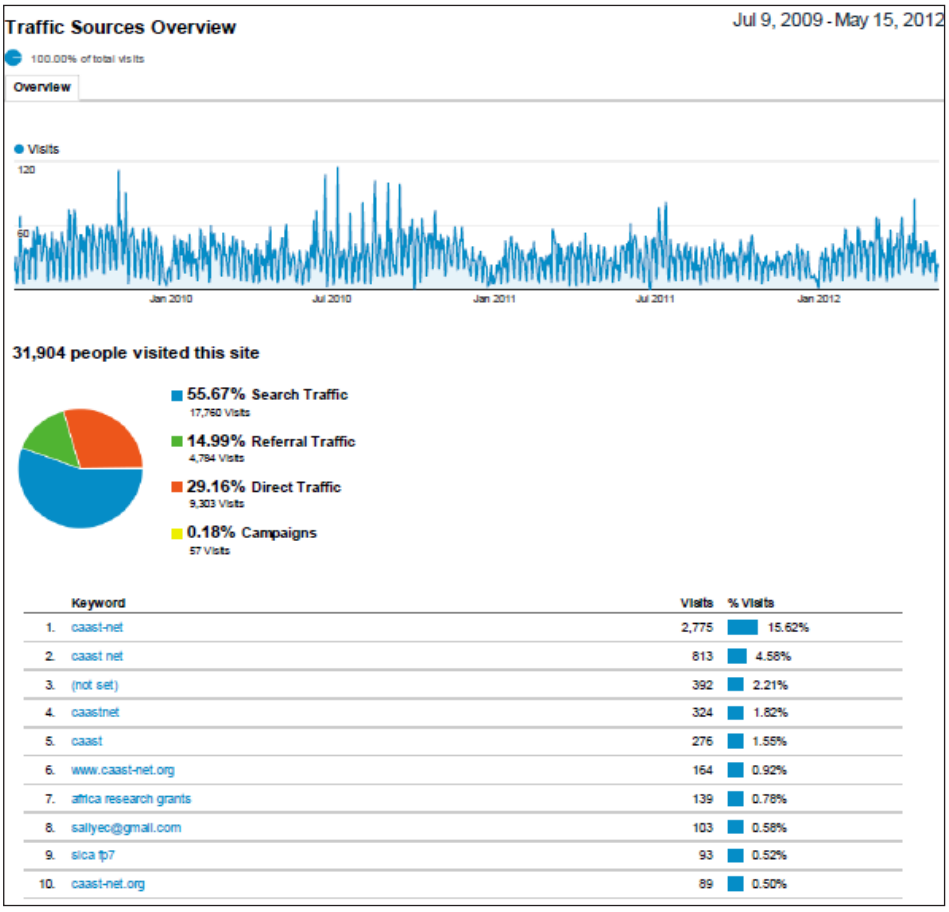


Figure 3b



It must be pointed out that the Google Analytics is an invaluable tool that has allowed the project team to pick up trends in terms of access to the project website, and to subsequently develop communication campaigns to target specific audiences.

Management at Work Package Level
The online website system that the CAAST-Net project utilises also provides workspace for the various work packages that form part of the overall project. This provides secure internal partitioning of workspace and allows the partners to share drafts within this work group. It must be noted that such security features are indeed of great value in addressing IP concerns, and in ensuring that the workspace is used. This work area takes into account the 8 work packages, thus matching the structure of the CAAST-Net project.

Each work package leader is able to organise and design the documents as he/she wants, through an online library. Moreover, the work package leader can then upload the documents and can manage them himself/herself, including updating and viewing of documents, which can then be shared with the specific work package participants.

Management Tools
Each work package leader has the responsibility to update the status of their deliverables. The different views quickly give an overview of the tasks: the tasks due by a specific day, the active tasks, or the tasks assigned to other partners. The section of the CAAST-Net website entitled library of the final deliverable reports includes the final documents regarding the official deliverables of the various work packages, as well as the overall technical report.
To help the coordination team in the management of the project, it was decided to use the Kanban Tool. Kanban is a smart visual project management application with real-time collaboration that allows teams to get work done faster. The Kanban Tool helps organisations to visualise workflow, analyse, improve business process, and reduce wasted effort. It is based on the Kanban method, originally introduced by Toyota.

The advantage of the Kanban Tool is that it allows each WP leader to manage the tasks of their work package, and allows each participant to follow up their work through the web. Whilst there are many other project management tools available on the market, the software applications that the project decided upon had to be easy to use and also provide clear visual representation of various project milestones. The Kanban Tool has ensured that the CAAST-Net project remains on target in achieving its goals by the conclusion of the project at the end of 2012.

Key features and benefits of this communication system
Having outlined the various types of communication tools that have been employed by the project, perhaps it is important to identify some of the key advantages of the internal and external aspects of the CAAST-Net website. It is clear from all of the metrics used that the broad range of communication tools used have ensured that all stakeholders are kept abreast of the progress and status of the project, despite the vast geographical distances between the parties concerned. It must also be pointed out that this communication system had to be implemented as most global research projects include in their work programme the development of a website for the dissemination of outputs, and the use of an Intranet to manage the project and to communicate inside the consortium. With regard to the CAAST-

Net project, it must be noted that communications have greatly contributed towards achieving the overall goals of the project, by creating and maintaining the efficiency of the website portal, ensuring that the information is easily accessible and ensuring the website serves as an information hub for all project stakeholders.

The CAAST-Net news bulletin and events are published quickly online by the Research Africa webmaster, who also ensures that it is displayed in an attractive way, under a good-looking and methodical layout, using a clear and simple messaging style, and including graphics/visuals where possible. Moreover, the papers and presentations from the various stakeholder conferences are available from the website via Open Access, and can be downloaded in a user-friendly PDF format.

Discussion and Perspectives

As indicated in the previous sections of this CAAST-Net project case study, a multi-partner, multi-year, bi-continental project will inevitably require the sharing of a vast amount of information, and involve collaborative work amongst institutes from many countries with different experience levels. Such projects require specific tools to communicate between partners inside the project, and to disseminate project outputs to the outside world, including the general tax-paying public.

Regarding the communication between the various partners, beside the conventional communication ways (e.g. telephone, meetings, reports), there are many software tools to help the project coordinator and the researchers, from shared intranet workspaces, to project management tools (e.g. Kanban Tool), from web meeting software (e.g. GoToMeeting), to web content management. All of these tools can work if all participants can use them.

While there were some issues relating to bandwidth connectivity for some partners, the increased investment in IT infrastructure in Africa has certainly mitigated this challenge.
The intranet can certainly be considered as the main communication tool inside a project, as long as the coordination team, project partners, and the work leaders fully support this idea. Project management tools are increasingly viewed in the he research arena as necessary in order to timeously fulfil obligations to funders. Whilst there are some open source software packages available on the internet, adequate provision needs to be made in the project budget to acquire relevant and customisable project management software.

Online meeting tools (such as WebEx or GoToMeeting) have played a significant role in streamlining the coordination of the project. It must be noted however that the IT infrastructure in some institutes/countries certainly has to be improved to increase the connection speed or the security system (firewall) has to be modified to allow the communication through those tools.

Regarding the dissemination of the project outputs to the public – as was noted with the CAAST-Net project, besides the website, project partners can certainly look at several ways to reach out to the public. These can include television interviews and radio spots, YouTube videos, Twitter feeds, Facebook page(s), blogs, podcasts, as well as the more traditional newspaper op-eds, press conferences, publications, conferences, newsletters, and exhibition stands.

Clearly, the dissemination tools have to be selected depending on the target audience and the stakeholders involved, and should take into account the budgetary constraints of the project. With this in mind, social media platforms are an inexpensive way of disseminating information. Moreover, there are free web-building facilities available on the web, and open source software (e.g. Joomla) is available. Because the practice of using social media to support project management is still emergent, there are certainly opportunities for the project coordination team to be innovative and to explore what are the appropriate tools to use based on the particular nature of the project. For example, using Twitter to disseminate live tweets from CAAST-Net stakeholder conferences has allowed messaging from the conference to reach a far greater audience in real-time.

One key goal for the communication and dissemination team in a multi-stakeholder project is probably to include in the project, people with a wide range of skills, including an in-depth expertise of the scientific activities in the project, as well as skills in the communication of scientific terminology in a way that the public would understand. The CAAST-Net project has ensured that a communications team is in place from the onset of the project. An understanding of the evolving nature of social media and an ability to communicate with a diverse group of stakeholders is also an important contributing factor for the success of the project.

The communication and dissemination tools to be used in multi-local and interdisciplinary projects such as CAAST-Net, or other similar projects (e.g. RIMI4AC), should be the same tools used in a multidepartment and multidisciplinary research institute with communication/marketing, administrative, financial, legal, and IT services. Whilst acknowledging that financial constraints may affect these decisions, the issue is to define at the very beginning of the project, which would be the best set of communication tools to use, and to then implement a communication plan that is predicated on achieving the long-term deliverables of the project.

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SUB-THEME

Tomorrow's common research priorities
for Nordic and Southern African universities

Futures studies for the Southern African region
'From Africa' not 'on Africa'

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ABSTRACT
Futures studies is well established in the Nordic region and its history can be readily charted, but in Africa it barely exists in an institutional form and its evolution and impact is little known or understood. The first two sections of our paper briefly examine the history of futures studies, spending most attention on the African experience. We go on to show that the Higher Education landscape in the Southern African Development Community (SADC) region is very different to that in the Nordic region. Recent futures reports present forecasts and scenarios that show a differentiated Higher Education landscape in the SADC; there are few Higher Education Institutions (HEIs) and even the most optimistic forecasts show that the region as a whole will not meet the international enrolment norm of 30 per cent by 2050. The last part of the paper examines our experience of collaboration with Finland and its well-developed linkages between state and universities. One outcome of three years of collaboration from 2007 to 2009 between two SANORD members, the Finland Futures Research Centre (now a part of the University of Turku) and Rhodes University, was a proposal to develop a multi-disciplinary, inter-institutional futures studies programme – intended to help Africa find its own voice in future studies. The final part of our presentation reflects on the unsuccessful experiences that we have had to date in finding funding. We conclude by asking whether our experience can be seen as highlighting some of the challenges SANORD may be positioned to overcome if the SADC region's HEIs are to achieve the *Knowledge Village* scenario and begin to match their Nordic counterparts.

In his keynote address to the World Futures Studies Federation, Yale's Professor Wendell Bell (2001: 65) posed the following question: ' … futurists … cooperate across disciplinary boundaries … adopt perspectives that are holistic, issue-driven, action-focused, value-relevant, and future-oriented. Could futures studies help lead the way in reshaping education for the twenty-first century? The answer, I think, is yes …'

Human beings are futures orientated creatures by nature and we have always planned for the future, even if we are not sure if our plans will bear fruit. What is surprising, however, is that futures thinking has played such a minor role in education. The following quote by Toffler (1974) encapsulates this:

> "All education springs from images of the future and all education creates images of the future … all education, whether so intended or not, is a preparation for the future. Unless we understand the future for which we are preparing, we may do tragic damage to those we teach."

We are near the end of the UN decade (2005-2014) of Education for Sustainable Development and yet the connections between futures studies, sustainable development and climate change are still being forged. In Africa there have been some encouraging initiatives in relation to futures studies thinking, but it still tends to be divorced from the groundswell of work being undertaken as regards climate change, risk, sustainable livelihoods, etc. This is paradoxical since envisioning, or being capable of imagining positive and better futures, is a foundational skill in Education for Sustainable Development (Tilbury and Wortman 2004).). Cole (2001) concludes that futures studies are determined by the intentions and competencies of both authors and the audience. What is still lacking, however, are the African authors of futures studies and the development of African perspectives to add to those from Europe, the USA, Latin America, India, South Korea and China.

Development of Futures Studies

Futures thinking has interested people throughout history since the time of ancient Greece. Utopian writers such as Plato in the fourth century BC, Sir Thomas More in the sixteenth century and Sir Francis Bacon in the seventeenth have all posited alternative futures. Early sociologists such as Saint-Simon, Comte, Marx, Durkheim and Weber investigated society and systems in order to build up an analysis of, and prescriptions for, society. In the 1920s Russian economist Kondratiev developed his famous long-wave theory which showed that regular cycles of economic development and recession are repeated globally approximately every 50 years. To this day, writers and analysts have embraced the futures ideas of these thinkers.

The development of futures as a field of study started in the 1940s. Cole (2001) and Anderson (2010) give us good summaries of the evolution of the various strands of the discipline, including the founding of the two major transnational bodies, the World Future Society in 1966 and the World Futures Studies Federation in 1973. They show us how futures studies developed forecasting and planning activities for nation states and organizations and distinguish between the perspectives of the post World War Two American futurists and their European counterparts. More importantly for the argument here has been the development of a critically-orientated futures study that embraces global perspectives to literally *think* the world.

Ossip K. Flechtheim invented the concept of *Futurologie* in 1943, and the first attempts to use scenarios were made in military planning during the Second World War. In the USA, futures thinking was first popular in the military sector with the activities of the Rand Corporation. This continued in a number of think tanks and research institutions through to the 1960s and beyond. In France, futures was part of social planning and incorporated in the national planning organization, DATAR, established in 1963. Gaston Berger instigated the Centre International de Prospective and founded one of the earliest journals dealing with futures called *Prospective* (Bell 2003). In the Nordic countries too, the welfare state process encouraged societal planning approaches. In the 1960s civil society's concerns about environmental pollution, developing countries, disarmament, women's rights, participative democracy and peace research fertilized futures thinking. The first conference on futures research was organized in Oslo in 1967. This group was inspired by Robert Jungk's futures workshops for common people. Norway was the obvious place for such a conference as the country of international peace diplomacy and home of Johan Galtung, the famous peace

researcher.

Futures studies in the Nordic Region

The Copenhagen Institute for Futures Studies was established in Denmark in 1970: this was the first institutional Nordic futures studies organization. In Sweden, a state secretariat of futures studies was established in 1973 following the recommendation of a committee chaired by Alva Myrdal. The Institute of Futures Studies followed in 1987. In Finland, futures thinking emerged in the 1970s in various sectors of society, the first organization being the Finnish Society for Futures Studies of 1980. The Finland Futures Research Centre (FFRC) was started in 1992. In Norway, futures activities have grown more slowly, even if long-term planning has taken place in governmental administration since the 1950s.

In Europe, the Nordic region, the USA and Asia the number of futures projects increased through the 1980s and 1990s but the response within educational systems has been slow. Two different models concerning the development of futures in higher education can be identified. The first is exemplified by Finland where the Finland Futures Academy (coordinated by FFRC) began in 1998 to offer futures courses to the Finnish university network. A few years later, the Master's programme of Futures Studies was started in the Turku School of Economics by FFRC and it developed into an international Master's programme of Futures Studies in the University of Turku in 2010. Interestingly to the arguments presented later, the multidisciplinary nature of futures studies means that it lacks the status of a pure academic discipline in the Finnish university system. The alternative model has been to add futures modules to traditional education programmes. This has happened, for example, in strategic planning, technology and innovation research, economics and logistics in several European countries like Sweden and Denmark over the last 10-15 years. The aim of our collaboration, described later, was to develop a Masters programme but we ended up with the alternative, a single futures module, as part of an established Geography degree programme.

The demand for futures education has increased in the last 20 years as futures thinking has penetrated through societies all around the world. The number of consultants working on futures has increased. Companies and public sector organizations have carried out hundreds of futures projects in Finland alone. It is therefore surprising that futures education has developed so slowly in educational curricula and institutions, even more so when we consider that there has been an enormous growth in the output of work concerning sustainable development and climate change.

Futures studies in the African Region

Multi-lateral agencies have been sporadically engaged with futures thinking on the African continent since the early 1990s. The United Nations Development Programme instigated the African Futures/National Long Term Perspective Studies in 1992 (Republic of Mauritius 1997). Their involvement led to the collection of 13 papers in the special issue on Africa in *Futures* 1994 Volume 26 (9). In 2002, collaboration with the Phyllos Institute produced the *Guide to Conducting Futures Studies in Africa* (Cairncross, 2002) and in 2009 UNDP produced *Crafting Africa's Futures: National Long Term Perspective Studies* (UNDP, 2009). Egypt, South Africa and Kenya all have nodes in the Global Millennium project (Millennium Project, 2009) which was instigated in 1996. The South African Node of the Millennium Project was established in 2004. South Africa also has had a chapter of the World Future

Society since 2009.

The United Nations Environment Programme has been incorporating futures scenarios within its benchmark programme, Africa Environment Outlook (UNEP, 2002, 2006). UNEP is housed in Nairobi, Kenya, and the organization has a strong history of connections with the Nordic region, as revealed by the chronology of UNEP's mandates:

1. The 1972 UN General Assembly resolution 2997 (XXVII) which resulted from the Stockholm UN Conference on the Human Environment.
2. The 1992 UN Conference on Environment and Development (Earth Summit), especially Agenda 21, held in Rio de Janeiro.
3. The 1997 Nairobi Declaration.
4. In 2000 the Malmö Declaration (which followed the first Global Ministerial Environment Forum) and UN Millennium Declaration.
5. The 2002 World Summit on Sustainable Development held in Johannesburg.

The futures thinking in UNEP's Africa Environment Outlook Reports can be traced directly back through the Polestar project's *Great Transitions: the Promise and Lure of the Times Ahead* (Raskin *et al.*, 2002) which was a report of the Global Scenario Group (GSG). The GSG is located in the Stockholm Environment Institute and Tellus Institute and can be seen as profoundly influenced by the 1987 Brundtland Report.

There are few futures studies institutions in Africa but, nevertheless, there have been a number of national vision programmes in eastern and southern Africa that have resulted from the application of futures thinking. Some date back to the 1990s and the UNDP's facilitating role, others appear to be independent processes. In the 1990s there were two initiatives. In 1996, thirty years after Botswana's independence, the Office of the President initiated the process that led to the Long Term Vision for Botswana, which encompassed the next 20 years to 2016 (Government of Botswana, 2002). In Mauritius, the UNDP facilitated the Vision 2020 process that led to the development of a National Strategy for Sustainable Development 1999-2005 (Republic of Mauritius, 1997). The first decade of the twenty-first millennium witnessed Rwanda (2002) producing 2020 Vision, Namibia (2004) producing Namibia Vision 2030 and Kenya (2007) developing Kenya Vision 2030 (Republic of Rwanda, 2002, Republic of Namibia, 2004, Kenya Vision 2030, 2011). Each of these visions for the future has normative goals for the nation to aspire to, principles on which their development is to be based and national planning frameworks to fulfil the vision.

The development of futures studies in South Africa has been somewhat different from the other countries mentioned above, being closely aligned to the changing political landscape. There have been a number of scenario building exercises from the late 1980s onwards through the democratic transition period as outlined by de Villiers (2002) and Segal (2007). Clem Sunter's scenario planning exercise of the late 1980s originated in the Anglo American Corporation but was later spread to a much wider audience. The High Road scenario, for example, was presented to both F.W. De Klerk and Nelson Mandela before his release from prison in 1990. It was very influential in showing audiences that they could choose for, and subsequently influence, what Sunter called 'an active future'. We can probably infer that Sunter's activities

also helped develop an environment more conducive to futures approaches in South Africa. Certainly South Africa is distinctive in that futures studies has an institutional home in the Business School at Stellenbosch University. In 1992 a second set of scenarios (The Mont Fleur scenarios) was developed from an initiative of the University of the Western Cape during the multi-party negotiation process. Of the four scenarios the best outcome was for an inclusive democracy and economic growth which, with sustainable policies, led to the scenario called The Flight of the Flamingos. The September Scenarios were commissioned by the Congress of South Africa Trade Unions (COSATU). These produced three possible scenarios that might confront the organization in the next 10 years. Skorokoro is the one which seems most applicable to the present (COSATU, 1997). Lastly, ESKOM, South Africa's publicly-owned electricity generating body, developed extensive South African, provincial and African scenarios for the period 1997 to 2012.

More recently, in South Africa there have been a sequence of futures activities emanating from the President's office. Policy Coordination and Advisory Services produced *South Africa Scenarios 2025: The Future We Chose* (Republic of South Africa, 2008). The following year came the green paper on the need for national strategic planning (Republic of South Africa, 2009). Finally, *The National Development Plan: Vision for 2030* was published for comment in 2011 (National Planning Commission 2011). There has been more attention paid to environmental concerns, even environmental collapse, in the more recent of these visions and scenario building exercises.

Despite these various initiatives outlined above, Africa has remained peripheral to the intellectual development of futures studies. We now turn to a consideration of futures studies in higher education in the SADC region.

SADC Higher Education: Characteristics and Futures

The Higher Education landscape of the Southern African Development Community (SADC) region is very different from that of the Nordic region. In this section we outline some distinctive features of the SADC higher education sector and show how futures studies has been used to investigate future possibilities in the education system.

The major demographics of SADC's public higher education sector are mapped in Figure 1. Data from the 2010 edition of the World Higher Education Database (International Association of Universities 2011) show a marked difference in the number of Higher Education institutions between the two SANORD regions. The Nordic region had just over 25 million inhabitants in 2010 and 166 Higher Education Institutions. This gives a ratio of one HEI for every 150,000 people. In contrast, the SADC region has 10 times as many inhabitants (just over 275 million) but one-third the number of Higher Education Institutions (68). The SADC ratio is one HEI for every 4,000,000 people. Recent studies have shown that for SADC to reach levels comparable to current Nordic HEI norms there will need to be a massive expansion in the tertiary sector, backed by a particularly favourable economic environment, low population growth and policy scenarios that promote Higher Education in collaboration with government policy and external stakeholders (Cloete *et al.* 2011, Southern African Regional Universities Association (SARUA), 2012).

Figure 1 shows that within SADC there are three tiers. Although not easily visible on Figure

1, the small Indian Ocean island of Mauritius is best provided for with 650,000 inhabitants per HEI. Grouped with it is the southern cluster starting with Botswana with 1 HEI per million people, then Swaziland, South Africa, Lesotho, Zimbabwe and, finally, Namibia with 1 HEI for 2.2 million people. The Eastern SADC countries follow as a regional bloc with between three and six million people per HEI in Madagascar, Mozambique, Tanzania and Zambia. Worse off is Malawi with 7.85 million per HEI. Last are the two large western SADC countries; the Democratic Republic of the Congo (13.56 million per HEI) and Angola with 19 million per HEI. It must be stressed that these data are for publicly funded HEIs; there are large numbers of private HEIs in, for example, the DRC and Angola.

The total numbers of students enrolled in HEI by country is shown in Figure 2, compiled from data presented in the 2012 Southern African Regional Universities Association (SARUA) publication: *Building Higher Education Scenarios 2025: A Strategic Agenda for Development in SADC* (SARUA, 2012). It clearly shows the dominance of South Africa (with many public universities) and the DRC (with many private universities) in terms of the number of students enrolled in HEIs. What is also clear is that some countries have far fewer HEI students enrolled given their total population size. Malawi has 15.7 million inhabitants and roughly the same number of students as Lesotho, with only 2 million people. Angola has 19 million inhabitants and similar student enrolments to Botswana with 2 million people in total, Mozambique has 20 million inhabitants and the same number of students as Mauritius which has a total population of only 1.3 million. So there are some very major disparities within the SADC region.

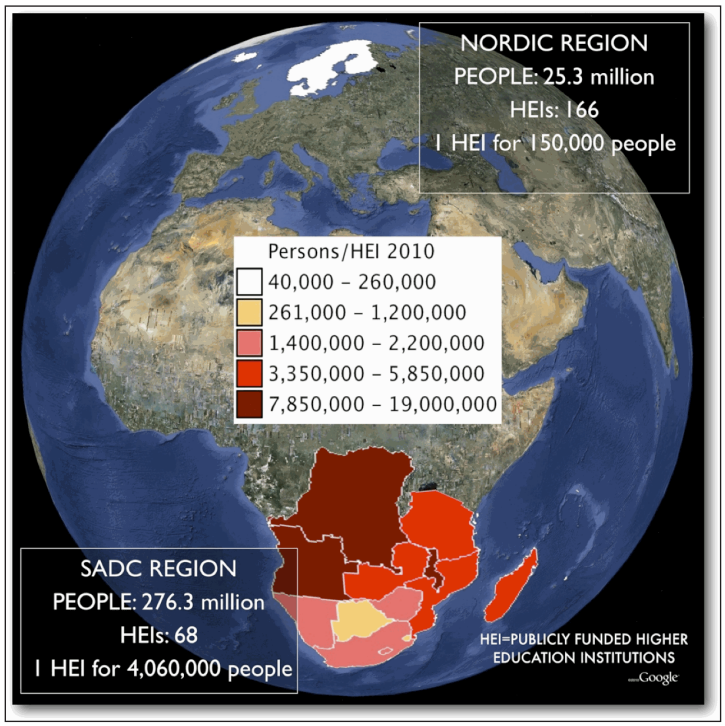

Figure 1: SANORD Countries Higher Education Institutions 2010

Futures thinking has been applied to develop scenarios for Higher Education in southern Africa.

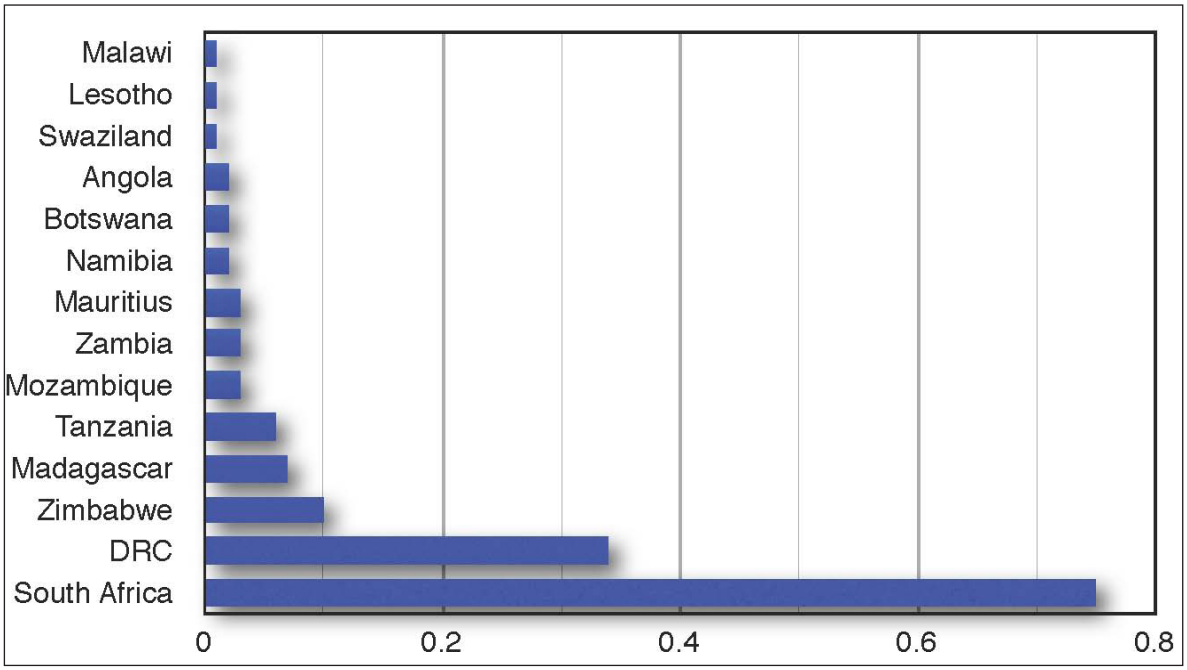

Figure 2: HEI Enrolments 2010: SADC countries
Millions of Students

The SARUA report uses the International Futures Model to forecast enrolments by country across the region up to 2050. Figure 3 is adapted from the report for the sake of clarity. It shows their base case forecast which should occur if current trends and policies continue into the future with no major changes. Five countries will quite clearly dominate the region in terms of the proportion of their students enrolled in tertiary Higher Education: Mauritius with approximately 45%, Botswana 40%, South Africa 35%, then Angola and Namibia with approximately 25%. The bottom tier is made up of countries with a lower than 10% enrolment: Lesotho, Zambia, Zimbabwe, Malawi, the DRC and Madagascar. The international norm of 30% enrolment in HEIs is therefore only likely to be reached in four of the fourteen countries of the region. Some are predicted to stagnate, with very low levels of between 5 and 10%. This may lead to a scenario, described below, that has been labelled the *Demise of Higher Education*.

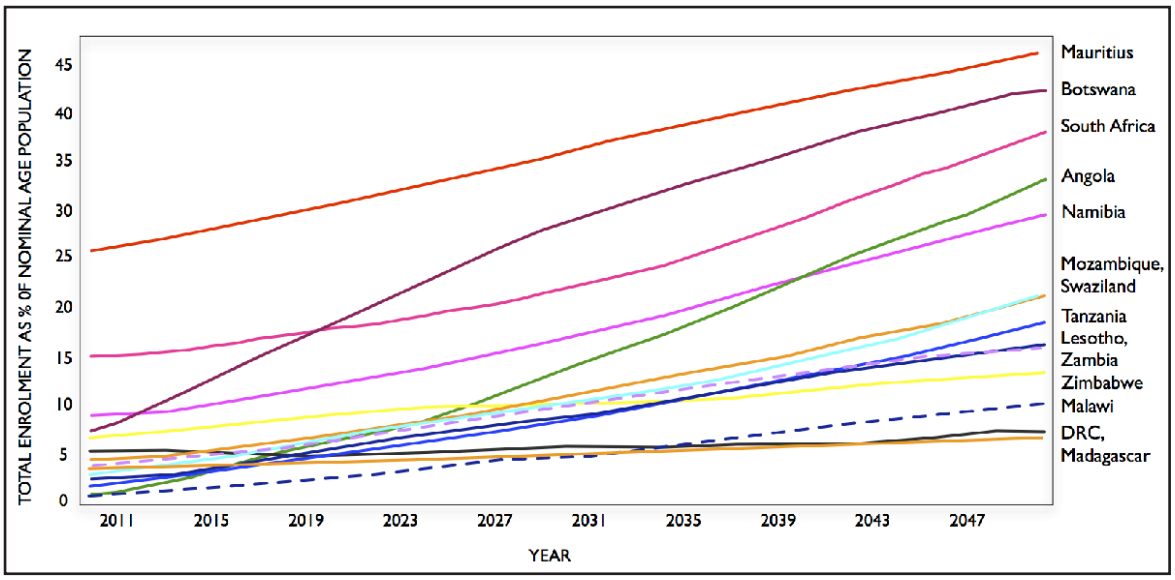

Figure 3: Tertiary Enrolment Base Case Forecast, SADC Countries

The IFS was also used to derive the most optimistic forecast for the SADC region based on low population growth estimates, high economic growth and high education spending. This was in order to see how quickly the region's tertiary enrolments could possibly grow. The IFS base rate (used for Figure 3 above) predicted an increase in tertiary enrolment in the region from 5.4% to only 16.3% over the period to 2050. Even under the most optimistic forecast it only grew to 27.5%. This was because the following six countries failed to meet the 30% normative goal, and one of them (DRC) was the largest in the region: the DRC, Madagascar, Malawi, Zimbabwe, Zambia and Lesotho.

In addition to quantitative forecasts, SARUA also developed four qualitative scenarios. The participants identified two key criteria, or axes, through which to determine four scenarios, one positive, two intermediate and one negative. The axes are shown on Figure 4 with the four scenarios: the axes were technological revolution (accessible to inaccessible) and human capability (scarce to abundant).

The Knowledge Village is the best-case scenario. Here technology such as hardware and software is accessible, and it has been fully integrated with appropriate management protocols, practices and policies. Education systems' content is freely and equitably available throughout the SADC region supported by a sustainable, well-qualified academic component. The HE system is itself fully capacitated and integrated. This scenario replicates much of what is available today throughout the Nordic region.

In *Higher Education: the Missed Flight*, the social aspects of the socio-technical systems are what hampers the development of HEIs. This relates not only to inadequate or incomplete human capabilities and resources, but also to the absence of protocols, policies and practices that enable appropriate use to be made of technology-based educational practices. This is a scenario probably familiar to those in Universities in SADC countries from the upper portions of the base case scenario in Figure 3 above.

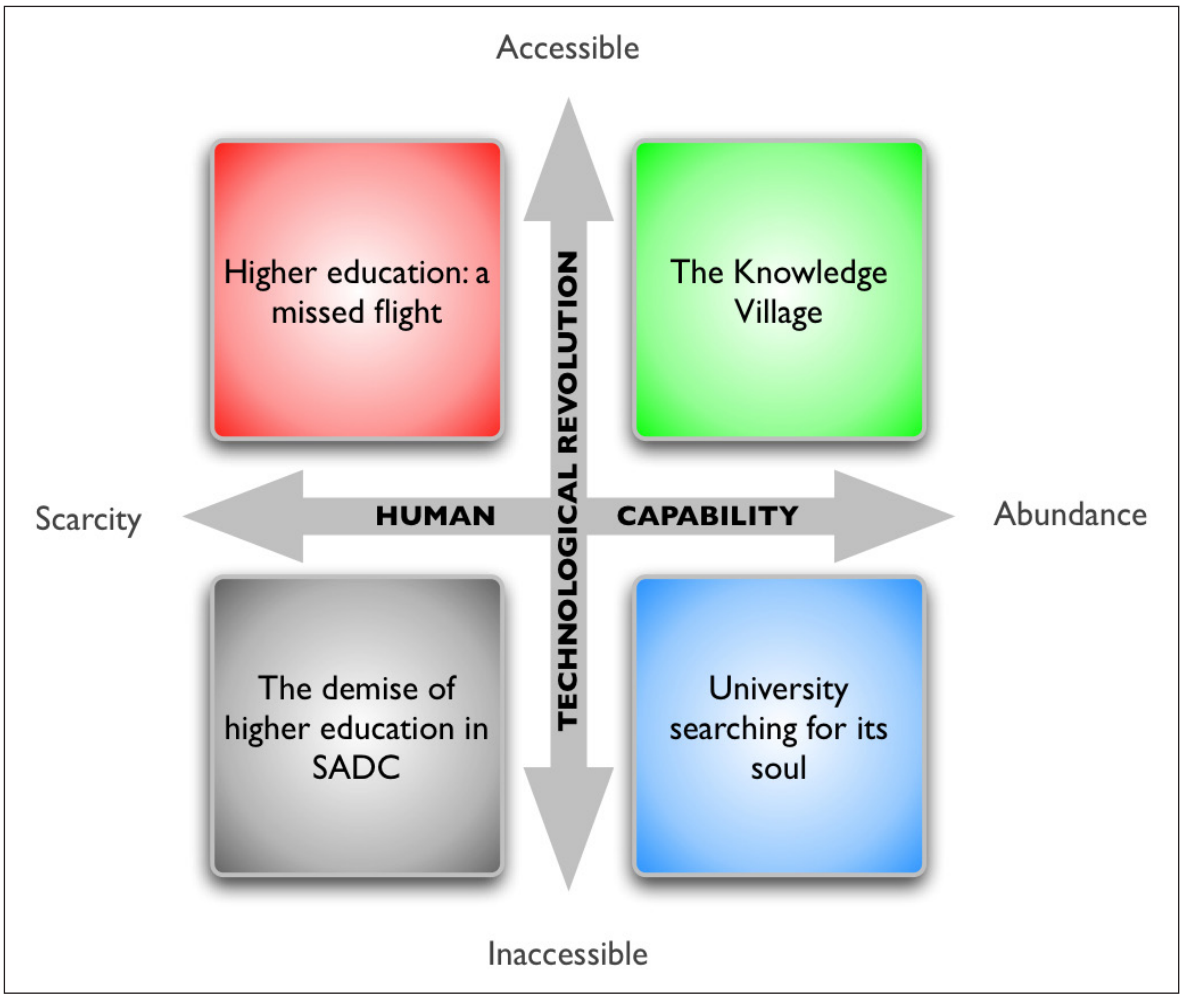

Figure 4: Four possible Scenarios for SADC Higher Education in 2025

The University Searching for its Soul is the other intermediate scenario. It is the mirror image of the *Missed Flight*; here the constraints are due to ICT innovations in education and management simply not being available. There is human capacity; Higher Education personnel and their students can identify their needs and wants and can use the appropriate technology, but the HEI system cannot provide the solutions. This scenario is also one that is encountered throughout SADC today.

Lastly, the *Demise of SADC Higher Education* is a scenario which combines weak human capacity and poor technological support. The result is poor quality students who are inadequately educated, though they may possess a paper qualification, and academic staff who produce very little or no research in institutions that are mired in a culture of mediocrity. Eventually Higher Education becomes of very little relevance to social development.

In order to achieve the most desirable scenario, the *Knowledge Village*, by 2025 the SARUA report recommends the following activities and programmes in response to the four key areas of Financing, Access and Equity, Quality, Research Output (Southern African Regional Universities Association, 2012). These activities are listed below with brief comments where they are particularly relevant to SANORD and the futures programme that is the focus of the next section.

Financing

1. Utilize both public and private sectors;
2. Increase partnerships between institutions in the region, use this to develop collective activities, policies and programmes;
3. Develop re-investment strategies, for example a University endowment fund. It is pertinent that that both SANORD and the futures studies proposal discussed below, address the second of these two recommendations.

Access and Equity

1. Facilitate regional ICT cooperation, harmonization, acquisition and standards;
2. Improving cross-border connectivity through developing and implementing appropriate policies;
3. Develop regional standards to harmonize e-learning, Open and Distance Learning (ODL). Our proposal for a futures studies programme based in South Africa and networked through the region would definitely benefit from the interventions listed above.

Quality

1. Promote a higher education system that is harmonized across the region;
2. Develop self-regulatory quality assurance systems;
3. Encourage student and staff exchanges at regional, continental and international scales based on considerations that enable credits to be transferred. It is clear that SANORD's goals, our own experience of collaboration between South Africa and Finland and the proposed activities given below would all relate to mobility and exchanges

Research Output

1. Joint research programmes and a research development fund are needed at the regional scale;
2. Develop a focus on open innovations and licensing that have effective intellectual property rights protection and which can facilitate international marketing;
3. Facilitate policy making that is evidence based;
4. Increase our production of marketable goods and services;
5. Develop public-private partnerships;
6. Promote and develop regional niches of research excellence around themes such as water or energy. Our proposed futures programme, presented in the next section, would relate potentially to all of these.

Before turning to an examination of the futures programme that we sought to establish, *Capacity Building through Education for Sustainable African Futures – SAFE*, we need to briefly examine the important Centre for Higher Education Transformation (CHET) report from 2011 *Universities and Economic Development in Africa* (Cloete *et al.* 2011). It is relevant firstly because it examines in depth the performance and potential of eight selected African Universities, five of which are in the SADC region: University of Botswana, University of Mauritius, Eduardo Mondlane University in Mozambique, Nelson Mandela Metropolitan University in South Africa and the University of Dar es Salaam in Tanzania. These five encompass the whole range of HEI enrolment described previously and relate to countries with very different likelihoods of reaching the Knowledge Village scenario. Secondly, the report positions and debates HEIs within their contested role as agents for development and

economic growth. This is especially interesting since the report singles out three systems as role models for the successful linking of economic development with higher education policy and planning. These three experiences are from Finland, South Korea and the state of North Carolina in the USA. The text box below gives the key findings verbatim.

What is critical here is both the overlap and differences between the recommendations of the SARUA report and the findings above. CHET stresses the linkages necessary between government, external stakeholders and universities and highlights the need for understanding of, and agreement about, the role of higher education in development. SARUA are understandably much more interested in how HEIs can work together across the region. Inadequate funding for staff to conduct research is embraced by both, but poor incentive regimes are highlighted by CHET. Perhaps there is scope for SANORD to embrace the challenges raised by both reports?

Findings: Universities and Economic Development in Africa (Cloete et al. 2011, p165.)

- "There was a lack of clarity and agreement (pact) about a development model and the role of higher education in development, at both national and university levels. There was, however, an increasing awareness, particularly at government level, of the importance of universities in the global context of the knowledge economy.
- Research production at the eight African universities was not strong enough to enable them to build on their traditional undergraduate teaching roles and make a sustainable, comprehensive contribution to development via new knowledge production. A number of universities had manageable student–staff ratios and adequately qualified staff, but inadequate funds for staff to engage in research. In addition, the incentive regimes did not support knowledge production.
- In none of the countries in the sample was there a coordinated effort between government, external stakeholders and the university to systematically strengthen the contribution that the university can make to development. While at each of the universities there were exemplary development projects that connected strongly to external stakeholders and strengthened the academic core, the challenge is how to increase the number of these projects."

Capacity Building through Education for Sustainable African Futures (SAFE): joint South African - Finnish proposal

Effective collaboration is foregrounded in both the important reports highlighted above: collaboration within the region and with external donors. The following section describes our experience of building a relationship with Finland Futures Research Centre (FFRC) from 2007 to 2009 which in 2010 led to a proposal for the setting up of a Futures Studies programme at Masters level in South Africa. This was to be a multi-disciplinary, inter-institutional Futures Studies programme with Rhodes University and the University of Turku drawing postgraduates equally from SADC countries and South Africa. The proposed funder was Finland's Higher Education Institutions-Institutional Cooperation Instrument (HEI-ICI), which is a good example of Finland's proactive relationship between HEIs and the state. Unfortunately we were unsuccessful in our bid for funding. What follows draws from our experience and the proposal itself, especially where the issues discussed previously

in the SADC Higher Education section are pertinent.

Activities leading up to the SAFE proposal

2005 marked the first contact between FFRC and RU when Mr Hietanen visited Rhodes University to explore the potential for collaboration between the two institutions. He initiated the concept of education and development tools for an international innovation network with Professor Fox who made a follow up visit to Helsinki (funded by South Africa's National Research Foundation) to take the collaboration forward. In 2006, Mr Hietanen returned to Rhodes to experience the role-playing simulation African Catchment Game (ACG) and discuss its potential as an innovative international foresight game. This resulted in Professors Fox and Rowntree being invited to attend the Finland Futures Academy's (FFA) Summer School in 2007 to play the ACG and other role-playing simulations with summer school participants. They also attended the Finland Futures Academy (FFA) conference on Regional Foresight.

At the same time as these early activities were taking place, a proposal was drawn up by Mr Hietanen, with input from RU partners, that was submitted to and accepted by, Finland's Centre for International Mobility's North-South-South programme. The *Foresight Game* project received funding for education cooperation through teacher and student exchange to run from 2007-2009. The project brought visiting Finnish academics to South Africa, exposing Rhodes students to futures thinking, while Finnish students were immersed in African realities through experiential learning via the role playing simulations led by South African academics who visited Finland. Rhodes academics had the opportunity to attend two further FFA conferences on Systems and Simulation (2008) and the Future of the Consumer Society (2009). In 2009 three Rhodes staff and four students participated in summer school activities and attended the conference. Two of the students presented conference papers and one incorporated the outcomes of playing the ACG with Finnish students into her MA thesis. In the same year three FFRC staff contributed to RU's postgraduate programme.

The Foresight Game project brought new ways of thinking to both groups. The Rhodes students and academics became aware of futures thinking and the possible applications within a university curriculum; Finnish students were introduced to a new way of learning that brought to the fore the complexities of African development. As academics, we explored the potential to use role-playing simulation games to better understand the nature of complex systems and their possible future evolution (Rowntree *et al.* 2009, Wilmot and Fraenkel, 2009, Fox *et al.* 2012).

Developing the SAFE proposal: considerations and constraints

Collaboration through the CIMO Foresight Game project led to drawing up a concept note and the submission of a project proposal to HEI-ICI to develop a postgraduate curriculum in futures studies *Capacity Building through Education for Sustainable African Futures – SAFE*. We wanted to build on our collaboration and use of innovative educational practices (such as the role-playing simulations) to develop a programme that would produce a generation of professionals and educators who could address the complex questions concerning the sustainable future of southern Africa. Our region's serious challenges (food security, energy supply, climate change, political insecurity, social cohesion, HIV/AIDS, etc.) are frequently interlinked and need creative solutions and appropriate interventions if we are to have Higher

Education institutions that enable us to meet our Millennium Development Goals. Currently there is only one other Futures Studies programme in Africa: the M.Phil at Stellenbosch University. We felt that Rhodes University was in a good position to build further capacity in the region and provide skilled professionals who were capable of applying futures thinking in their work across the public and private sector and Community Based Organizations.
An important feature of the proposed Masters programme was that in order to address 'the inherent complexity of nature and society' it must be interdisciplinary. The US National Academy of Sciences has concluded (2004, p188):

> "Interdisciplinary thinking is rapidly becoming an integral feature of research as a result of four powerful 'drivers': the inherent complexity of nature and society, the desire to explore problems and questions that are not confined to a single discipline, the need to solve societal problems, and the power of new technologies."

This is echoed by the South African Department of Science and Technology (2008, p.20) in their Ten Year Plan's presentation of Five Grand Challenges. They see the need for cross-disciplinary teams examining the interface between technology, complex change, and human and social systems. Interdisciplinary practice requires trust between partners and persons. Trust is created by communication, interaction and co-operation between people. SANORD is therefore a key role-player in bringing this about through its activities. Some of the principles that were to be incorporated into the implementation of the SAFE project were: voluntary participation, no artificial constructions, the win–win principle, companionship, shared workloads producing shared benefits and specification of roles of partners.

The development of the proposal to HEI-ICI was undertaken in collaboration with key departments at Rhodes University where there was already either an active interest in futures studies or futures research: Education, Environmental Education, Geography, Journalism and Media Studies, Sociology and Zoology. Networking beyond our own institutions was also an integral part of the proposal. Partners in tertiary education across the Eastern Cape Province included the Universities of Fort Hare and Nelson Mandela Metropolitan University. We also received support in principle from the National Research Foundation's Akili Complexity and Integration Initiative and the South East African Climate Consortium (SEACC). Further afield across the Southern African Development Community region, SANORD was seen as a key platform through which additional partners in SADC and the Nordic region could be sought. We also planned to work regionally through the newly established Africa Regional Network of PERL, the Partnership for Education and Research about Responsible Living.

The proposed Masters programme would not only contribute to the development of professionals who could work towards a sustainable African future, it also addressed two issues raised by the institutional audit of Rhodes University in 2005 (Council on Higher Education 2006, pp.34-36). The first was to encourage the University to 'to explore further additional areas of responsiveness where it could maximise the synergies between the three core functions of teaching and learning, research, and community engagement within a disciplinary as well as a multidisciplinary framework.' The second was to further internationalisation: 'The HEQC recommends that Rhodes give continuing attention to the development of a fuller conceptual framework for internationalisation . . . and how it could be made compatible with local and regional objectives and the African identity signalled

in the institution's mission and vision.' We have shown above that the CHET and SARUA reports also focus on these issues.

Developing a truly interdisciplinary teaching programme is challenging, especially in an institution such as Rhodes University that prides itself on having a strong discipline-based structure. Previous attempts to do this at Rhodes have foundered owing to the absence of an enabling structure that rewards interdisciplinary collaboration. There are probably similarities here to the Finnish higher education system's higher status for 'pure' disciplines which we noted earlier. One objective of our proposal, therefore, was to facilitate a debate at RU concerning both interdisciplinarity and internationalisation based on examination of current protocols, practices and mindsets in the institution against the recommendations of international reviews such as the National Academy of Sciences mentioned previously. A key problem is the need for partners to co-operate in a situation where the funding structures produce competition between role-players. This applies both internally within the University and externally between potential partners within South Africa and the broader SADC region. This is the issue of cross-border harmonisation and need for transfer of students, staff and credits systemically in SADC that the SARUA report discusses.

New programmes require new ideas, new structures, innovative teaching methods and a lot of time. Time is probably the most limiting resource in South African universities, especially within formal academic departments where heavy undergraduate teaching loads and small staff numbers are the norm. Elements of the *Higher Education: a Missed Flight* scenario are easy to recognize at present in South Africa and they made collaboration with external stakeholders essential to the proposal. The survey by the National Academy of Sciences 2004 'Facilitating Interdisciplinary Research (IDR)' concluded (p.190): 'IDR is typically collaborative and involves people of disparate backgrounds. Thus, it may take extra time for building consensus and for learning of methods, languages and cultures.' The challenge also becomes one of developing a strong and exciting interdisciplinary postgraduate programme without forfeiting a sound disciplinary base at undergraduate level. Teaching exchanges through the HEI-ICI funded SAFE programme was to be one answer to this problem, but it would be effective only in the short term and would not in itself help develop academic capacity at Rhodes University. What is needed is a larger South African staff complement that can take on extra commitments. Here we can see the need for the strong pact between HEIs, external actors and the state that could facilitate the acquisition of funding for such staffing needs.

The intention of the SAFE proposal was to establish the programme through collaboration with the FFA, but thereafter other avenues of funding would need to be discovered. Although fee-paying students and student-related government subsidies contribute to some of the costs of running a programme, there is a need to cover the shortfall and to provide support for the students themselves though adequate bursaries. Most South African and southern African students (or their families) are not in a position to fund themselves past undergraduate studies.

Concluding Remarks

A strong proposal was submitted to HEI-ICI which, ultimately, was turned down. Is this a typical example of a *Missed Flight* and, if so, what can be done to ensure that other

initiatives catch their plane to the *Knowledge Village*? Can SANORD facilitate processes and champion structures that promote interdisciplinarity within single institutions and further collaboration between regional institutions leading to a more sustainable future for us all? Is there a role for the organisation to address the SARUA report's recommendations as regards financing, access, equity, quality and research? Can we take up the challenge to coordinate between government, external stakeholders and the university to bring about the sustainable development which we all desire? The answer to these questions needs to be 'yes' if we are to fulfil the assertions of Bell and Toffler that started this paper: then we will have both futures in education and education for the future.

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Diversity as a common research priority
for Nordic and Southern African universities

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ABSTRACT
This paper sets out to consider concepts of diversity as means to discuss and address the increasing diversity of modern societies and to reflect the development of research priorities for universities in Nordic and Southern African countries. Based on reconceptualisations of theoretical concepts like culture, multiculturalism and national identity, the presentation will address and reflect upon how modern societies in the South and the North are becoming increasingly diverse with respect to the demographic and ethnocultural composition of populations. The paper sets out to discuss how various European countries, like Denmark, have responded differently to diversification during the past decades. Based on this, challenges in dealing with diversity as a common research priority for Nordic and African universities will be addressed.

> "Migration not only changes the migrant, but it changes the society of emigration and the society of immigration" (Schuerkens 2005:543).

One of the factors that characterise both Scandinavian countries as well as African and Sub-Saharan African countries in the late 20th and early 21st century is the diversity of the demographic and ethnocultural composition of the population. Although historical, geographical, and political circumstances differ, and are caused by various conditions, modern societies, regardless of their geographical location in the South or the North, are becoming increasingly diverse in regard to origins, cultures, language and religion. Rapid development in modern technology with respect to transportation and community, combined with global migration processes, has enabled major population movements, and thus an ever-increasing complexity in population composition (Demireva 2011; Kornø Rasmussen 2008; Özden 2011; World Bank 2011a, 2011b).

In responding to growing diversity, modern societies, however, face a number of challenges with respect to the sociological, political, and social transformations taking place globally and within each country. The challenges of complexity have been met in different ways (Eriksen, Alghasi and Ghorashi 2009; Schuerkens 2005; Terrén 2008; Vasta 2009).

The British researcher Ellie Vasta (2009) argues that, in spite of increasing globalisation during the last 15-20 years, a general crisis or even 'a moral panic' has occurred in political and public discourse in Europe with respect to handling immigration and immigrants. Many European nation-states – despite an emphasis on the values of globalisation with respect to economic development and consequently to the global flow of people, goods, and services – in recent decades have found themselves in a schism between what Vasta refers to as 'imagined homogeneity' and 'enduring cultural differences' (ibid: 30). Vasta's studies and comments occupy a remarkable position and will be addressed in due course.

This paper will deal with what will arguably become the common future research priority for both South African and Nordic countries: the increasing diversity of modern societies. Building on theoretical literature and case studies, diversity will be discussed as a possible concept for understanding and handling the complexity of modern societies. Based on a literature review of how theoretical concepts like culture, multiculturalism, civic coexistence, and national identity have been reconceptualised in the wake of increased diversification, an outline will be presented of how diversity can become a common research priority for Scandinavian and African countries.

Global and local migration processes

Charts and statistics from both the United Nations Population Division and the World Bank illustrate how global migration processes in the late 20th and early 21st century have led to an increased quantity of people moving from place to place (World Bank 2011a; UN 2011). In the period from 1960 to 2000, the total number of migrants increased from approx. 92 million to approx. 165 million. The largest ever wave of migration to the United States and Western Europe took place during this period with the relocation of approx. 26 million people, representing about 42% of the total global migration process. Furthermore, the migratory processes of the period primarily occurred from the South to the North (Özden et al., 2011). However, it has been evidenced that migration takes place along other axes as well. Charts from 2011 considering migration to African countries show large and various fluctuations in the number of migrants: while 15.2 % of the total population in Gambia and 13.7% in Djibouti in 2005 consisted of migrants, the corresponding figure for South Africa in the same year was only 2.6% and 4.4 % for Botswana (World Bank 2011a:104, Table 9.4). According to World Bank records, in 2011 it was estimated that about 3% of the world's population were living in countries other than countries of birth (World Bank 2011b; Özden et al., 2011). In figures from the UN, the number of international migrants in 2010 was estimated to be about 214 million people (UN 2011).

Like many other European and Nordic countries, Denmark during recent decades has turned into an increasingly diverse society in terms of the culture, ethnic origin, language, and religion of the total population; this is mainly due to migrants and their descendants from all around the world coming to live in the country. In the late 1970s, only about 0.7% of the population had cultural, ethnic, language, or religious backgrounds other than Danish; mainly immigrants from Turkey, Pakistan, Morocco, and the former Yugoslavia. In the interim, both immigration to, and the heterogeneity of, the Danish population has increased. Compared to the 0.7% of the 1970s, in 2009 it was recorded that 10.5% of the population in Denmark consisted of immigrants and their descendants (Ministry for Refugees, Immigrants and Integration, 2009, Table 27). Already by the 1990s, a Danish linguist counted more than 100 different languages being spoken in Denmark (Stensig 1996).

As outlined by Terrén (2008), Schuerkens (2005), and Vasta (2009), rather homogeneous societies like Denmark that have previously been influenced by global migration patterns have had their self-perceptions and concepts of homogeneity challenged. As the Spanish researcher Terrén points out:

> 'the contemporary migrations that are so much a part of the current process of globalisation […] lead to more culturally diverse societies' (Terrén 2008:75).

The circumstance in Denmark and the other Scandinavian countries is thus similar to the world situation characterised by the growing complexity of populations.

What will happen to European countries, as has happened to other immigration destinations throughout the world, is likely to be a situation in which 'migration not only changes the migrant, but it changes the society of emigration and the society of immigration' (Schuerkens 2005:543).

Responses to increased diversity – case study: Europe in the 2000s

Since the beginning of migration processes to Europe in the 1960s, European countries have responded differently to increased diversity in terms of policy. In the first decades of immigration to Europe, multiculturalism was the accepted way to deal with immigration in many countries. However, as mentioned in the introduction and observed by Vasta (2009), during the past decade a 'retreat' from multiculturalism, 'both in policy and in public discourses', has taken place in many European countries (ibid:19). In contrast, policy approaches have been promoted representing a 'pervasive view that pluralist or multicultural approaches to immigrant inclusion have failed' (ibid:19). Thus, a number of European countries in the 2000s have introduced more assimilationist approaches, including stricter requirements for citizenship, residence, etc. Furthermore, a number of European countries have introduced so-called 'Britishness', 'Dutchness' or 'Danishness' tests (ibid: 28).

Such trends have been observed in Denmark in the 2000s as well. In 2006 naturalisation tests and, in 2010, residence tests focusing on Danish only subjects, in continuation of rather essentialist understandings of culture, history and nationhood have been introduced in order for migrants to obtain citizenship and residence (Petersen 2012). Furthermore, in Denmark in 2003 a new curriculum for the teaching of adult immigrants was adopted in which essentialist positivistic perceptions of Danish culture and history were made mandatory; this replaced the former focus on cultural awareness raising approaches in language and culture teaching for adult immigrants (Petersen 2011). Studies of adult migrant education policy in Denmark – during approximately ten years of a conservative-liberal led government supported by a rather nationalistic party – illustrate how a primarily monocultural discourse has been promoted and excluded former multicultural approaches (Kornø Rasmussen 2008; Petersen 2011, 2012). This development in Denmark evidences how, as observed by Vasta, recent policies and programmes in European countries have been 'heavily influenced by an assimilationist philosophy, rather than a focus on making diversity work' (Vasta 2009:19). Also, in the UK, as further outlined by Vasta, despite a long tradition of multiculturalism, in the late 2000s 'a discourse of assimilation within the framework of integration' has replaced former understandings (ibid:24); while in the Netherlands it has been stated that 'strong multiculturalism' combined with a 'strong welfare state' has contributed to the failure of immigrant integration (ibid). In France, a 'Republican model of assimilation' based on 'linguistic homogeneity and civic nationalism' has been promoted (ibid:21).

Vasta outlines that 'the shift away from multiculturalism' has had a negative impact on the former cultural recognition of immigrants and has 'led to a move away from the right to pursue' an immigrant's 'own language, traditions and culture in favour of an emphasis on those of the dominant culture' (ibid). In other words, a sort of 'engineering' of an assimilative

discourse has taken place in European policy towards immigrants.

However, according to Vasta and other researchers, neither 'Danishness tests' nor other national tests and demands for increased assimilation seem to be able to solve the problems and challenges facing European countries (Schuerkens 2008; Terrén 2008; Vasta 2009). Efforts to link foreigners to the countries they have settled in through specific tests focusing on traditional national culture in essentialist terms do not appear to be an appropriate response to the increasing cultural diversity in the population composition of European countries. As Vasta outlines:

> "social solidarity or immigrant participation cannot be achieved without immigrants and ethnic minorities developing a sense of belonging. But this cannot be produced through the likes of Britishness or Dutchness tests or a policy shift towards assimilationism (...) In other words 'social cohesion' cannot be engineered" (Vasta 2009:28).

The increasing diversity of modern societies thus challenges not only policies in Europe, but also theoretical concepts. There has been a demand for rethinking theoretical concepts of not only culture, identity and multiculturalism, but also of 'civic coexistence' (Terrén 2008:75).

Reconceptualising theoretical concepts: culture, multiculturalism and national identity
While sociologists like Giddens (2000) and Bauman (2000, 2004) have been aware of the necessity to reconsider theoretical definitions of a modern society one of the leading American anthropologists, Clifford Geertz (1973), has discussed the need to develop and rethink the concept of *culture*. Geertz promoted an understanding that the traditional essentialist perception of culture as distinct units – a concept on which most culture tests in Europe in the 2000s have been based – needs to be carefully revised. Dynamic theoretical concepts of culture which emphasise the 'fluidity' of modern societies (Baumann 2000), and in which culture is understood as 'historically created systems of meaning' (Geertz 1973:52), correspond more appropriately with the development of modern society. Rather than focusing on essentialist theoretical concepts of culture as a fixed and static category, culture is reconceived by Geertz as 'the fabric of meaning in terms of which human beings interpret their experience and guide their action' (Geertz 1973: 52).

In 2005, the Dutch researcher Schuerkens emphasised that a theoretical understanding of nation-states as 'distinct cultural units, circumscribed by geographical territories' can no longer be accepted; cultures are continuously 'influenced by migration, tourism, international communication' and trade, as well as by international organisations (Schuerkens 2005:543). In the same way that the concept of culture has been reconceptualised, recent theoretical revisions of *multiculturalism* have been promoted focusing on a broadened understanding.

Parekh (2000) forwarded multiculturalism as a concept to describe the transformation of once relatively homogeneous societies into diverse societies; the use of the concept in European public discourse, as evidenced by Vasta, has often resulted in an understanding of immigrants as discrete multicultural entities rather than parts of the society as a whole (Vasta 2009). Nevertheless, as observed not only by Vasta the 'on-going diversification of multicultural and multi religious societies' (Terrén 2008) leads to a new challenge, i.e. that

all members of modern societies need to reconsider themselves in terms of the continuous diversity. The broadened concept of multiculturalism in policy thus promotes the idea that all citizens, and not only immigrants, need to consider themselves and their lives in terms of this understanding. As mentioned by Vasta, a 'sense of belonging, shared values and trust can only emerge from the people themselves'; this emphasises that 'structures and processes of equality need to provide the basis and resources for immigrant participation, out of which a sense of belonging is likely to emerge' (Vasta 2009:28). Thus, according to Parekh (2000), Vasta (2009), and others, the concept of multiculturalism, as an alternative to the imagined homogeneity of many European countries, must embrace not only the lawful assimilation of immigrants, but also needs to set the conditions for the transformation of the entire spectrum of diverse modern societies. As such, multiculturalism needs to be understood as 'a philosophy and policy that promotes an acceptance of cultural diversity' by also 'encouraging the recognition of immigrants and their children as legitimate citizens by the society and its institutions' (ibid:30).

Not only multiculturalism but also citizenship and *civic coexistence*, according to Terrén (2008), need to be reconceptualised. As outlined by Terrén, the heightened diversity of modern societies 'puts traditional democratic values and patterns of civic coexistence to the test' (Terrén 2008:86). It is necessary to find new models of coexistence:

> "A new model of cultural integration may help us respond to these important questions. Citizenship in increasingly complex and heterogeneous civil societies implies rethinking legal rights, but also the attitudes and representations that condition the experience of intercultural contact in daily life. Citizenship is thus deeply implicated in the cultural dimension of civic coexistence, as it always implies some kind of collective identity and a certain sense of belonging" (Terrén 2008:79).

In this way, according to Terrén, the continuous cultural diversity may contribute to the development of democracy:

> "Reassessing our feelings of belonging and the attitudes we develop toward culturally diverse people is a process that, when based on the common denominator of intercultural coexistence, can lead to a stronger democracy" (Terrén 2008:81).

Apart from the development of new theoretical concepts of culture, multiculturalism, and civic coexistence, a further challenge in modern society, as outlined by Vasta (2009), is the reconceptualisation of understandings of *national identity.* While primarily essentialist notions of national identity, nationhood, and nation have been forwarded in European policy contexts –evidenced in the naturalisation tests from 2006 onwards in Denmark – such theoretical concepts seem to be challenged through the increased complexity and diversity of modern societies (Bauman 2004; Hall 1991; Vasta 2009; Østergaard 2001). During recent decades discussions about identity in terms of constructivist and relativist theoretical positions have been promoted; these relate social interactions and individual belonging to concepts of 'liquid identity', and thus have become seen as objects of change (Baumann 2004; Hall 1991). According to sociologists and anthropologists, not only the concept of individual identity but also the understanding of national identity needs to be reconsidered and reconstructed in order to respond adequately to the challenges of the increased diversity

of modern societies. As Vasta highlights, this entails:

> "an acceptance and affirmation of the fluidity of the national identity, which in any case continues to change through the process of globalisation and the interaction of cultures at local level" (Vasta 2009:30).

Dialogue and negotiation between different groups and actors in society are, according to Lott (2010), Vasta, and others, important methods and approaches in everyday transcultural and multicultural interactions. Cameron and Turner (2010) suggest that 'multicultural education, anti-racism education, diversity training and dual language schooling' can be introduced as 'diversity-based interventions' (Cameron and Turner 2010:324).

On one hand, global migration processes influence and challenge both emigrant and immigrant countries by increasing diversification with respect to the demographic and ethnocultural composition of the population. On the other hand, theoretical concepts of culture, multiculturalism, citizenship, and national identity, have been reconceptualised by researchers in terms of addressing, recognising, and understanding the increased fluidity of dynamic global development.

Diversity as a common research priority for Scandinavian and African countries

In modern societies – both in the South and the North – research, studies, and input from researchers thus play an important role at both theoretical and empirical levels. However, current research and research approaches are challenged in many ways; many studies – even research with respect to immigration – is often carried out at local levels when in many cases broadened research approaches and studies at global levels could be appropriate. As outlined by Schuerkens, 'classical migration phenomena need to be questioned in a global world characterised by transnational processes that challenge disciplines such as sociology and social anthropology, which often function in territories confined by national frontiers' (Schuerkens 2005:550). Diversity as a common research priority for Northern and Southern African researchers may thus – in broadened research designs and approaches – contribute to further knowledge not only about migration processes, but also about societies of emigration and immigration. Often, as observed by Schuerkens, 'researchers are not accustomed to fieldwork in more than one region' (ibid).

With reference to Marcus (1995), who promoted the idea of multi-sited research approaches, Nordic and Southern African researchers can benefit from research approaches in which a complexity of issues are studied. In multi-sited methods it is possible to 'follow' both persons, things, policy and concepts through different spheres of contexts at both local and global levels (Marcus 1995). Furthermore, in multi-sited studies the transformations can be observed in the dynamics of the studied elements. Thus, research approaches addressing different aspects of migration, immigration and diversification at micro-, meso- and macro-levels can be further developed. As emphasized by both Marcus (1995) and Schuerkens (2005), 'fieldwork in more than one region is necessary in order to understand social changes caused by transnational migrants, who define themselves by their double belonging' (Schuerkens 2005:550). Schuerkens outlines that:

> "the classical analysis of migration processes in immigration contexts has to be

replaced by the study of emigration and immigration regions, which are linked by transnational migrants, no longer confined to life-worlds in only one nation-state, but to multiple locations in a global world characterised by permanent social transformations" (Schuerkens 2005:550).

Diversity thus can be seen as a common research priority not only as a notion linked to theoretical reconceptualisations of concepts addressing the increasing complexity in modern societies. In addition, reasons causing diversity in terms of global migration processes and diversity itself in different settings in societies of both emigration and immigration, across private, public and voluntary sectors, can be subject to study alongside global comparative studies. Both Nordic and Southern African universities can play a crucial role in this development.

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The Risk and Vulnerability Assessment Centre at the University of Limpopo

Generating new research possibilities within SANORD

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Abstract
Multiple stresses such as poor service delivery, poverty, inadequate supply and of water and energy, poor infrastructure, complex disease burden, and food crises that Africa is most vulnerable to will be aggravated by climate variability and change. All the people, especially the poor in the rural areas, who are already experiencing a low quality of life, are predicted to suffer the most because of climate change. The Department of Science and Technology in South Africa, cognisant of this scientific prediction, responded to this situation by funding the establishment of Risk and Vulnerability Assessment Centres (RVAC) at rural universities in South Africa. The RVAC's core mandate is to supply quality research data on rural areas on a number of critical indicators identified in the South African Risk and Vulnerability Assessment Atlas. In addition, these centres are expected to provide excellent tertiary education in spatial analysis and modelling that can be applied to the environmental, economic, social, and health sectors. Data and information from the Atlas will be used by local authorities for improved planning, decision-making, and development of appropriate intervention strategies at the target sites. This paper presents an overview of the RVAC at the University of Limpopo and explores some of the research areas in which the University of Limpopo can collaborate with other members in the SANORD Partnership.

The term weather refers to the day-to-day atmospheric or meteorological conditions (temperature, moisture or humidity, cloudiness, sun-shine, wind velocity, and barometric pressure) at a specific location and moment in time. The weather is driven by the energy of the sun and the rotation of the earth. The term climate refers to the long-term average weather conditions existing in a specific location. The earth's climate that has fluctuated within reasonable limits for life on earth is currently thought be changing for the worst (IPCC, 2007).

Climate change is emerging as one of the main challenges humans will have to face for many years to come. The following components of human life will face the direct or primary effects of climate change: water resources; ecological and biodiversity systems; the polar ice; available land for food production, human settlement, and commercial forestry; human, animal, and plant diseases; pests; oceans systems; and marine life. The primary effects on these components may in turn affect the migration and settlement patterns of humans and animals, human health, wellbeing, general survival, and livelihood and increase food, water, and energy scarcities. Furthermore, these effects may also have economic and political implications, for example, with regard to border security, immigration, unrest and violence, policies, and resource planning allocations made by governments to mitigate the effects of climate change and assist people in adaptation and survival.

The Southern African Developing Countries (SADC) chose the IPCC (IPPC, 2007) conceptual framework and model for climate change risk and vulnerability assessment. The IPCC (2007) defines vulnerability to climate change as 'the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate

variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity'. The assessment of vulnerability involves measuring of the exposure to risk factors and of sensitivity to risk factors, to reveal the potential effect of such risks and the capacity to manage and respond to those risks (Davies *et al.*, 2010).

The African continent has been highlighted as particularly vulnerable to global change, especially to climate-related stressors since a large portion of the people on the continent are already experiencing multiple development stresses, namely poor service delivery, low quality of live, poverty, poor and fragile infrastructure, inadequate supply of water and energy, complex disease burden, and food crises (SARVA Atlas; IPCC, 2007a; Callaway, 2004; FAO, 2006). Environmental change, drought, and land degradation add to this vulnerability (Thomas *et al.*, 2008). The poor people living in rural areas are predicted to suffer the most because of climate change. Agricultural production remains the main source of livelihood for rural communities in Africa, providing employment to more than 60% of the population, contributing to approximately 30% of the gross domestic product (Maponya, 2010). Agriculture is inherently sensitive to climate conditions and is one of the sectors most vulnerable to the risks and effects of climate change (Parry *et al.*, 1999); hence, an adverse effect on agriculture due to climate change would drastically worsen the livelihood of the rural people. Most of the SADC region is expected to become warmer and drier than it is currently because of climate change. This will certainly have a negatively effect on food production and the livelihood of the poor since the SADC region is over-reliant on rain-fed agriculture for food production and has a large poor rural population, relatively undiversified economies, and poorly developed infrastructure (Davies *et al.*, 2010).

The global community at the COP 17 Meeting of 2011 confirmed the importance of developing comprehensive solutions to the problems of climate change (COP 17 Report). Developing appropriate responses warrants the establishment of capacity and systems for monitoring, predicting, and identifying vulnerability hotspots and then developing and implementing effective mitigation and adaptation measures. In response to the South African situation, the Department of Science and Technology (DST) funded several initiatives including the establishment of regional Risk and Vulnerability Assessment Centres (RVAC) at rural universities in South Africa.

While the central focus of this paper is to present an overview of the RVAC at the University of Limpopo and possible areas in which the RVAC can collaborate with other members in the SANORD Partnership, it is important to provide the national rational and context in which such centres are expected to function and contribute. This paper will also briefly discuss other research possibilities within the RVAC and its partners.

The National Rational for Establishing Risk and Vulnerability Assessment Centres

The DST in its South Africa Ten-Year Innovation Plan (2008-2018) outlines an ambitious national plan for addressing major challenges in South Africa using science and technology. Climate change problems are addressed through a Grand Challenges Programme comprising three programmes: Space Science and Technology, Global Change, and Human and Social Dynamics. Under the Space Science and Technology programme Grand Challenge aims to improve space observation technology (such as satellite and telescopic technologies)

to enable improved monitoring of climate change and its effects on terrestrial systems (ecological systems and biodiversity, water, disasters, settlement patterns, and development, etc.) with a view to use such data to appropriately manage natural resources and respond to climate change and disasters. The second major programme under the Grand Challenges Programme is to mitigate the effects of climate change by providing energy security through the development of clean coal technologies and alternative environmentally friendly renewable energy. Under its Global Change programme, the Grand Challenges Programme seeks the following outcomes:

- To establish an internationally recognised science centre of excellence with climate change research and modelling capabilities, benefiting the entire continent
- To establish an internationally recognised centre of excellence focused on the Southern Ocean and its contribution to global change processes
- To strengthen research and global monitoring capabilities on Marion Island, Antarctica, and the Southern Oceans in partnership with other nations
- To generate robust regional scenarios to determine the rate and effect of climate change and extreme weather conditions in South Africa
- To initiate actions for the mitigation of and adaptation to climate change

Under its Human and Social Dynamics Grand Programme, especially with regard to global change, the grand Challenges Programme has the following objectives:

- To enhance research and modelling capabilities to anticipate the complex consequences of change and their effects on the dynamics of individual and social behaviour (decision-making, risk-taking, and adaptation) at all levels
- To understand the cognitive and social structures which create and define change
- To help people and organisations manage profound or rapid change

It is interesting to note that for South Africa, climate change is embedded within a much broader context of societal change influenced by other non-climate change factors. Various initiatives have been launched to implement actions based on these Grand Challenges. On 16 August 2010, the Deputy Minister of the DST launched the South African Risk and Vulnerability Atlas (SARVA). The Atlas based on up-to-date research draws out the future in different regions of South Africa through source data and maps. It covers six critical focus areas for South Africa with regard to climate change: water, agriculture, human health, coastal zones, biodiversity, commercial forestry, and land use. The Atlas is aimed at guiding decision-makers, especially at the governmental level, so that they can identify risks and plan accordingly for a future that is highly resilient to change. The Atlas needs to be updated regularly according to the latest data and findings. Decision-makers must be trained to understand the Atlas and to use the data and findings in policy-making and planning for appropriate actions. In recognition of the unique challenges faced by the most vulnerable people in rural areas, DST funded the establishment of regional RVACs, strategically located at universities based in rural areas: the University of Limpopo, University of Venda, Walter Sisulu University, University of Fort Hare, and University of Zululand. These universities

are located in predominantly rural environments in the Limpopo Province, Eastern Cape Province, and KwaZulu Natal Province. Large parts of these provinces occupied by African blacks are characterised by poverty, low human development index, high rate of unemployment, and poor service delivery. The aim of establishing such centres is to assist universities in these areas to enhance their capacities and capabilities in the area of climate change and environmental changes and assist local communities and others to respond to these challenges.

The centres are expected to achieve the following:

- Gather research data and information on climate change factors and on human social dynamics and to establish a repository of locally based data and information
- Become strategic service points under the stewardship of local university experts for:
  - education and training of communities and government employees
  - human capital development for global change research and response
  - research on global change including climate change and social dynamics
  - supporting communities and government to enable the effective use of the Atlas
  - active knowledge and information flow between the centre and communities
  - providing risk and vulnerability assessment services to local communities and government
  - assisting communities in managing risks
  - action research and social learning for sustainability, adaptation, innovation, and resilience
- Develop appropriate technologies and assessment tools for improved monitoring of change, risks, and vulnerability
- Develop models to address issues associated with global change at provincial and national levels as well as for the SADC region in particular and the African continent in general
- Identify and map the identified environmental and other risk factors through the use of satellite imagery and GIS
- Develop sustainability assessment methodologies relevant to the rural context
- Develop technological innovations for mitigation and adaptation to climate change

The Limpopo Regional RVAC and Possible Areas for Collaborations

In 2010, the University leveraged its capacity in the Vlaamse – Interuniversitaire Raad (VLIR) – Institutional Co-operation (IUC) Programme and collaborations with KLIMOS, Applied Centre for Climate and Earth System Studies (ACCESS), the Limpopo Government, and the Centre for Strategic and Industrial Research (CSIR) to successfully bid for the establishment of the RVAC at the University.

The UL-VLIR-IUC Programme is a partnership programme between the University of Limpopo and a consortium of Belgium universities (Hasselt, Antwerp, Gent, and Vrije). The Programme under the theme – *Human Wellness in the Context of Global Change – Finding*

Solutions for Rural Africa has five cluster areas with varying number of projects associated with the clusters as shown in Figure 1 and Table 1:

Figure 1. Linkages among UL-VLIR-IUC clusters and projects: C-SAM; RVAC; KLIMOS and other research activities (taken from the RVAC proposal)

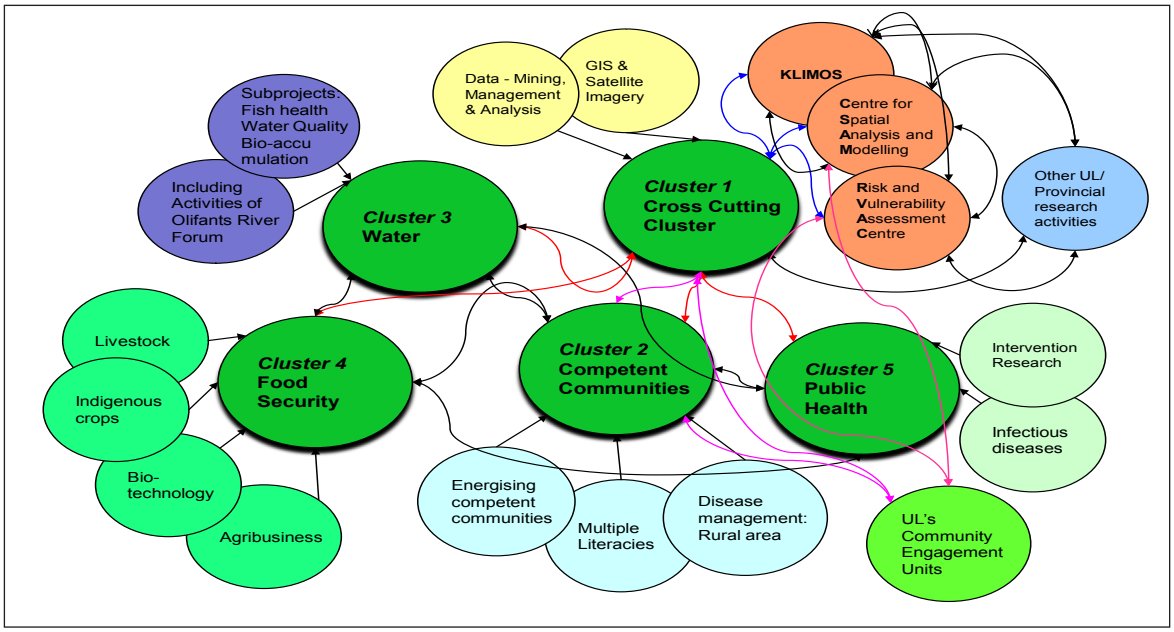

Table 1. The UL's VLIR-IUC project clusters and projects (modified from the RVAC proposal)

Clusters and Projects	
Cluster 1. Cross Cutting Cluster – Data Management	
Project 1: Data mining and analysis	
Cluster 2. Ensuring Competent Communities	
Project 2: Energising competent communities and improving wellness in the context of global change	Create a model to enable a community to become a responsive, competent community that can improve its developmental potentials in the context of global change.
Project 3: Multiple literacies	Increase capacity for multiple literacy knowledge development, which includes language literacy, science literacy, multi modal texts (visual, spatial, and dramatic arts)

Project 4: Management of diseases in a rural area	Develop an intervention programme for prevention, control, and management of chronic diseases in the Dikgale rural area The Dikgale study site is a member of the international INDEPTH programme Detailed demographic information on Dikgale is available from 1996 onwards. The population has developed significant risk factors for chronic diseases, because of living in poor socio-economic circumstances
Cluster 3: Water Resources – Olifants River System as a Model	
Project 5: Effect of water-related stressors on the ecosystem functions	Determine the effects of water variability, water pollution, and contaminated fish on human health and aquatic ecosystem in general. The Olifants river to be used as a model
Cluster 4: Food Security	
Project 6: Food security in the context of climate change	Improve food security in rural areas through improvement of UL's capacity in enhancing agricultural productivity, by focusing on: Improvement of indigenous chicken breeds Introducing improved drought-resistant indigenous crop varieties, by using biotechnology Improved production and marketing methods Integration of food security issues in development interventions through sustainability assessment
Cluster 5: Public Health	
Project 7: Intervention research	Develop effective intervention models for Health problems and health promotion among health care workers Social aspects of HIV/AIDS in children Alcohol and substance abuse Integrated infant and young-child feeding

Project 8: Infectious diseases	Investigate and develop capacity in the areas of molecular epidemiology, pathology, diagnostics, and management of infectious diseases. Studying HIV and its associated infections Determining preventive effects of vaccines on certain diseases Monitoring and studying antimicrobial drug resistance Assessing the burden of congenital, neonatal, and childhood infections

RVAC also works closely with the other departments in the University:

- Centre for Rural Community Empowerment
- MEDICOS – (community out-research programme for health matters)
- Experimental Farm – agriculture
- Radio Turf (dissemination of information).

In addition, RVAC currently collaborates with the following international and national organisations and is working towards expanding its network with other African and other international countries:

KLIMOS
KLIMOS, is a Flemish interdisciplinary and university research platform working towards the development of interventions for the integration of climate change and environmental sustainability. KLIMOS aims to develop a knowledge base on the consequences of climate change (and related environmental issues) in developing countries and to share this knowledge with stakeholders. In particular, KLIMOS conducts the following activities:

- It studies how energy, food security, and forest issues can be integrated in a sustainable way into development
- It develops environmental sustainability toolkits to support decision-makers in fostering sustainable development
- It develops participatory sustainability assessment methodologies and the application of these to establish resilient and empowered local communities

The KLIMOS website provides more information on KLIMOS and its ongoing research areas.

Collaborations with provincial departments
Various government departments like Statistics South Africa, the Department of Agriculture and Rural Development, and the Department of Planning are envisaged to collaborate with the RVAC. Currently, the Limpopo Economic Development, Environment and Tourism

(LEDET) are actively involved with the RVAC. The ongoing environmental research at LEDET focuses on three main issues:

Ecological footprint

- An ecological footprint provides a clear numerical value reflecting the use of resources and allows for development of concrete measures around environmental management. A questionnaire which measures 300 factors has been developed and is used to estimate ecological footprints of individuals and organisations.

Valuation of natural resources

- Valuation of living natural resources is a new trend in environmental economics, which allows for monetary value to be assigned to biodiversity systems. The purpose of this project is to prove that ecosystem services have tangible financial value, which increases over time and should become part of the calculation of the provincial assets.

Climate change

- To measure the negative effects on water security, food security, settlements, and infrastructure due to climate change and develop a Climate Change Response Strategy for the Province.
- To Publish an annual 'State of the Environment Report' for the Province
- To disseminate data and information to district and local municipalities
- To develop a Green Economy Strategy for the Province to mitigate the effects of climate change.

Collaboration with other national partners

Applied Centre for Climate and Earth Sciences (ACCESS)
ACCESS is a consortium of several agencies, researcher councils, research programmes, universities, and research groups who have combined efforts to deliver a range of outputs aligned to the DST's Global Change Grand Challenge. It is a platform for integrated and end-to-end research and education, services, and training outputs and outcomes related to the opportunities and challenges emanating from a varying and changing environment, collectively referred to as Earth Systems Science (http://www.access.ac.za).

South African Environmental Observation Network (SAEON)
The SAEON was established in 2002. According to the SAEON mandate, its responsibilities are three fold: observation of earth systems, data and information storage and dissemination, and education. The SAEON's flagship programmes are as follows (http://www.saeon.ac.za).

Tierberg Karoo Research Centre: 20 years of data
This project assembled, organised, analyzed, and archived two gigabytes of various long-term datasets (raw data, photographs, publications, etc.) as a contribution to SAEON's Node for arid lands.

Jonkershoek high altitude catchment: 60 years of data
This is the continuation of long-term monitoring of climate change. Monitoring climate change is demonstrated by the decline in Mean Annual Precipitation and Runoff.

African Coelacanth Ecosystem Programme (ACEP)
The SAEON Elwandle Node has been contracted by the South African Institute for Aquatic Biodiversity to manage the current five-year phase of the international ACEP, inclusive of the deployment of a Remote Observation Vehicle (ROV) for underwater observations.

Agulhas-Somali-Current Large Marine Ecosystem (ASCLME)
The SAEON Egagasini Node has been designated by Marine and Coastal Management to manage the data for this international programme and SAEON researchers are participating in data collection on ASCLME cruises.

Mapping the potential influence of climate change on the distribution of the mopane tree (Colophospermum mopane)
This project was rolled out in collaboration with South African National Parks to determine baseline information necessary to establish if and how the mopane veld will respond to climate change.

Long-Term Ecological Research (LTER) in Algoa Bay
This is a multi-disciplinary and multi-institutional project that gathers baseline data and monitors ecosystem changes off Port Elizabeth and Coega.

Water quality of South African ports
This project is commissioned by the South African Ports Authority.

Giyani rehabilitation monitoring
This project is funded by the Department of Environmental Affairs to determine the success of a project to rehabilitate degraded rangelands in a communal grazing area.

Seventy years of change in rocky shores
Biodiversity observation sites from 70 years ago are being re-sampled to determine the effect of resource use, coastal development, and climate change.

Development of a geo-portal for online data exchange
This project is conducted in collaboration with the CSIR and the Department of Minerals and Energy. It ensures data-sharing among SAEON participants as well as data provision to users, including government departments and the Global Earth Observation System of Systems (GEOSS).

Anticipated outcomes of the Limpopo RVAC

- Local communities in the Limpopo Province can perform participatory sustainability assessments to identify risks and vulnerabilities to develop and apply appropriate adaptive measures
- The resilience of local communities in Limpopo Province is strengthened
- The scientific knowledge regarding the design, application, and policy translation of risk and vulnerability assessments is strengthened
- The linkages between the scientists and local communities are strengthened through

collaborations on case studies, pilot projects, and action research projects

- Internationalisation of research, delivery of a high-level work-ready workforce, generation of relevant new knowledge for the region, increased student and publication outputs, staff development, increased career choices, and diversified employability of UL graduates.
- Achievement of aims set by the DST for regional RVAC centres
- Improved regional planning and resource management

Conclusion

There are several areas available for research collaborations with the University of Limpopo and its partners, within the Grand Challenges Programme.

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Increasing utilization of indigenous plants in Southern Africa
Development of a value chain framework for future research

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Abstract
Utilization of indigenous plants offers a huge potential in solving the problems of development in Southern Africa such as decreasing malnutrition, enhancing food security, poverty alleviation, rural income generation and many others. As a response to the existing gap in research considering utilization of indigenous plants, this paper analyses the written resources on utilization of indigenous plants through a selection methodology based on four restrictions and frequency analysis. It argues that research needs to initially bring a conceptual clarity and identify a limited set of methodologies. Moreover, value chain analysis is identified as the most appropriate framework for effective research on utilization of indigenous plants, and develops a customized value chain analysis framework for further research on utilization of indigenous plants.

In the last decades, climatic, technological and demographic trends have coincided with particular economic and political paradigms that have triggered new challenges for livelihoods globally. The impact of these events are strongly felt by the most vulnerable, especially the rural poor, women and those afflicted by diseases, particularly in Southern Africa. On the other hand, the challenges also create rationality for diversification of livelihood activities. Utilizing underutilized plants (UP) offers a unique opportunity for overcoming these challenges through multiple channels, and this opportunity is discovered by researchers and policy makers.

The implementation of many related research and development projects regarding UPs is increasing in number and scope, as seen in the last two decades. However, despite a few success stories, and other on-going projects, not many comprehensive studies analysing and evaluating the performance of these research and development projects are available. Consolidating the experience of these success stories and previous research is necessary and offers opportunities in designing effective indigenous plant utilization policies, projects and further research. The aim of this paper is examining this gap by analysing the literature on utilization of underutilized plants, as well as the experiences of past and on-going projects in order to identify important considerations for successful design and implementation of utilization attempts.

Resources and Methodology
Naming of Underutilized Plants
The first issue addressed considering underutilized plants is naming them. Literature reveals

an enormous diversity in naming underutilized plants. This paper considers the following names indicated in Table 1 as a synonym for them.

Table 1: Names Used to Describe Underutilized Plants

Underutilized crops	Indigenous crops	Native plant species	Promising species
Underutilized plant species	Indigenous plant genetic resource	Underexploited plants	Traditional crops
Underutilizes species	Indigenous food	Novel crops	Lost species
Neglected crops	Indigenous plants	Fringe crops	Orphan crops
Emerging crops	Indigenous new crops	Wild species	Cinderella crops
Neglected crops	Neglected species	New Crops	

Selection Rule for Relevant Resources

Utilization of underutilized plants is quite a broad concept and related to many concepts, both directly and indirectly. Therefore, identification of relevant resources requires a clearly defined set of constraints. In this paper, a resource is considered valid if it satisfies two of the following four conditions:

- At least one of the names listed in Table 1 is specified in the title of the resource.
- At least one particular underutilized plant species is specified in the title of the resource.
- The abstract, summary or executive summary of the resource refers to the rationality behind utilization of underutilized plants.
- The abstract, summary or executive summary of the resource refers to a minimum of two distinct issues in the utilization process. By utilizing the selection rule, the paper attempts to focus on identifying important considerations for successful utilization of underutilized plants.

Description of Resources

Research of resources and execution of the selection rule suggest 79 resources which are considered directly relevant to the paper objectives. Among them, 32 are conceptual papers or desktop studies which do not refer to case studies, 29 of them are single plant papers analysing a particular plant, 7 of them focus on a few plants, between 2 and 5 and, 11 of them are multi-crop, which covers more than 6 plants and more.

In addition to the academic resources, semi-academic, project and activity-based resources play an important part. Technical reports and published articles are groups

Table 2: Types of Resources

	Frequency	Percentage
Inproceedings	9	11,3
Booklet	2	2,4
Techreport	27	35,4
Book	9	11,3
Proceedings	3	3,6
Published Article	16	20,3
Inbook	4	4,9
Unpublished	3	3,6
Other	6	7,5
Total	**79**	**100,0**

with the largest number, among 79 identified relevant, resources. The technical report has 27 and published articles constitute the second largest groups by 16 resources.

Identification of Analysis Framework

The resources on underutilized crops are investigated and designed by several different methodologies and approaches. As indicated by Table 3, about 80% of the resources either did not specify a methodology or used its own distinct approach. Among the resources that specified a methodology, value chain analysis is utilized at most with 7 resources. The second most used methodology is policy gap analysis with 3 resources, and it is followed by market mapping and demand analysis.

The most referred value chain definition is the one by Kaplinsky and Morris. It defines value chains as "*the full range of activities that are required to bring a product from its conception to its end use. These include design, production, marketing, distribution, and support to get the product to the final user*" (Kaplinsky & Morris, 2001). This definition indicates the comprehensive nature of value chain approaches. Moreover, successful utilization of underutilized plants is considered dependent on the structure and relationships in the value chain (Hellin & Higman, 2008). It is assumed that embedding value chains in policy making processes has strong relevance for success utilization policies, and all donor activities are considered as

Table 3: Methodology Used in the Paper

	Frequency	**Percentage**	**Percentage II***
No Specified Methodology or Own Approach	62	78.5	N.A.
Market Survey	1	1.3	5.9
Value Chain Analysis	7	8.9	41.2
Policy Gap Analysis	3	3.8	17.6
Market Mapping	2	2.5	11.8
Demand-Supply Analysis	1	1.3	5.9
Demand Analysis	2	2.5	11.8
Commercial Villages Approach	1	1.3	5.9
Total	**79**	**100.0**	**100**

* Percentage among specified methodologies

having direct or indirect influence on value chains and; therefore, a deep understanding of value chains is a must for successful utilization (Altenburg, 2007), (Padulosi, Hodgkin, Williams, & Haq, 2002).

Value chain analysis leads to better modelling of the impact of underutilized plant utilization interventions and exploring alternative strategies for poverty reduction (Mayoux, 2003). Increased utilization as a tool is seen from recent years (Will, 2008) and the World Bank, FAO, ILO as well as some leading development donors such as USAID and BWZE utilize value chain analysis for methodology as entry points for policy interventions (Altenburg, 2007). In line with the resources specified above, as well as non-specified, this paper considers value chain analysis as the most comprehensive and efficient methodology to analyse utilization of underutilized plants, and it is utilized as a framework for the analysis.

Value Chain Analysis as a Framework

The value chain analysis used in the academic literature, as well as project implementation, present differences, and a description of the value chain analysis approach in the paper needs initial specification.

In contrast to several cases in the literature that assume value chain analysis is a synonym for supply chain analysis, this paper assumes value chain analysis is distinct from supply chain analysis. As summarized by Lundy et. al., supply chain analysis primarily focuses on costs and prices. Its strategy is based on basic commodities, and it is oriented towards supply. It also assumes independence of actors in the supply chain, and competitiveness of the enterprise is the key issue. In addition, information flows attracts little or no attention in supply chain analysis. However, value chain analysis primarily focuses on quality issues and value creation potential. It is a strategy based on differentiated commodities, and it is oriented towards demand. Additionally, it emphasizes and studies interactions between actors, and considers the competitiveness of whole market chain as the key issue. It also discusses information issues in detail (Lundy, Gottret, Ostertag, Best, & Ferris, 2007).

Table 4: Value Chain Analysis Framework

VC Operators	**Input Supplier**	**Producers Farmers**	**Brokers Middle Man**	**Processor Exporter**	**Wholesaler**	**Retailers Caterers**	**Consumer**	
VC Interaction	Flow of Goods Flow of Payment Flow of Information							micro level
VC Supporters	Private and public service providers offering VC oriented services: Research and Development, extension, training, implementing market surveys							meso level
VC Enablers	Framework conditions at national, regional, community levels, enabling VC development for biodiversity conservation and pro-poor growth development policies, legislation, regulations, directives, social infrastructure (education, health, social security) economic infrastructure (road and communication network, electricity, water)							macro level
VC Attitudes	Social norms, social structures and cultural factors influencing business relationships, cooperation and trust							meta level

Source: (Will, 2008)

Among several value chain analysis frameworks, utilized for analysis of underutilized plants, the framework developed by Will is taken as the reference framework. Table 4 above, indicates details of the framework suggested by Will.

Will suggests the following 7 main relevant actors for underutilized plant based food value chains: input suppliers, producer or farmers, brokers or middle man, processors or exporters, wholesalers, retailers or caterers and consumers. There are 4 different levels of

investigation in the analysis framework. The first level is value chain interaction. In the value chain interaction, there are three major flows: flow of goods, flow of payment, and flow of information. The second level is value chain supporting services. These services are provided partially by private and public providers. Some examples of these services are research and development, agricultural extension, technical and business training, market information inquiries and market surveys. The third level is value chain enablers. These are short or midterm fixed framework conditions at different geographical levels. They include policies, legislation, and social models such as education, health and social security, as well as infrastructure. The last and fourth level is value chain attitudes. They are long-term conditions such as social norms, structures and business behaviours.

Methodology

The paper analyses the literature by using the number of resources dealing with particular issues as well as specific statements suggested by the resources. Significantly more referred issues or statements are considered more general. The arguments and statements on practical issues are going to be classified and investigated using the framework discussed in the previous section.

Results

The resources are analysed in 7 major aspects: definitions, rationality, value chain operators, value chain interactions, value chain support services, value chain enabling factors and value chain attitudes. Definitions consider the concepts utilized for defining and describing underutilized plants. Rationality refers to the explanations given in the resources for the questions on why underutilized plants are subjects for research, projects and policies. Value chain operators refer to actors considered in the value chains of underutilized species in the resources. Value chain interactions cover the flow of information, payments and goods mentioned in the resources. Value chain support services refer to the services which are influential in the effectiveness and efficiency of underutilized value chains. Value chain enablers and value chain attitudes refer to short-term and long-term framework conditions, respectively.

Definitions

Resources associate 10 related concepts to underutilized plants. Among these, as indicated by Table 5, not fully exploited and underutilized constitute 33.6 % of whole referrals. The second most mentioned concept considers local dimensions of underutilized plants with 20.2% of whole referrals. The third and fourth mostly referred concepts are neglected by researchers and traditional dimensions of underutilized crops with 13.5% and 11%.

Table 5: Concepts Associated to Underutilized Crops

	Frequency	Percentage
Not fully exploited	40	33.61%
Locally known / locally important	24	20.17%
Neglected by researchers	16	13.45%
Used in quite old times/Traditional	13	10.92%
Neglected by policy makers	9	7.56%
Not domesticated	6	5.04%
Lost / Information lost	5	4.20%
Promising	3	2.52%
Used by poor / low status people	2	1.68%
Produced in small quantities	1	0.84%

The remaining concepts, with referrals less than 10%, are neglected by policy makers, have a non-domesticated status, are lost or have lost information, promotion, and usage by poor and low status people, and producing in small countries.

Rationality

Twenty major items are provided in the resources as reasons for conducting research, making policies and implementing projects on underutilized plants. The reasons, which are presented in Table 6, are in a wide range of subjects. The most referred rationalities for action on underutilized plants are reduction of malnutrition and enhancing food security by 15 and 14 referrals. The third, fourth and fifth most referred rationalities are ecological sustainability, conservation and protection of biodiversity, containing special ingredients for improving health, and rural employment and rural income generation. Other more referred rationalities for actions on underutilized plants are poverty reduction, general income generation, and low input requirements.

VC Operators

VC operators are the actors involved in the creation of the value chain. Analysis of these resources reveals 125 referrals to the actors and their involvement in the value chain. As indicated by Figure 1, among these, the most referred are processors by 26% and primary producers by 24%. Input suppliers receive the third attention by 14%, followed by retailers and caterers, brokers and the middleman, wholesalers and consumers.

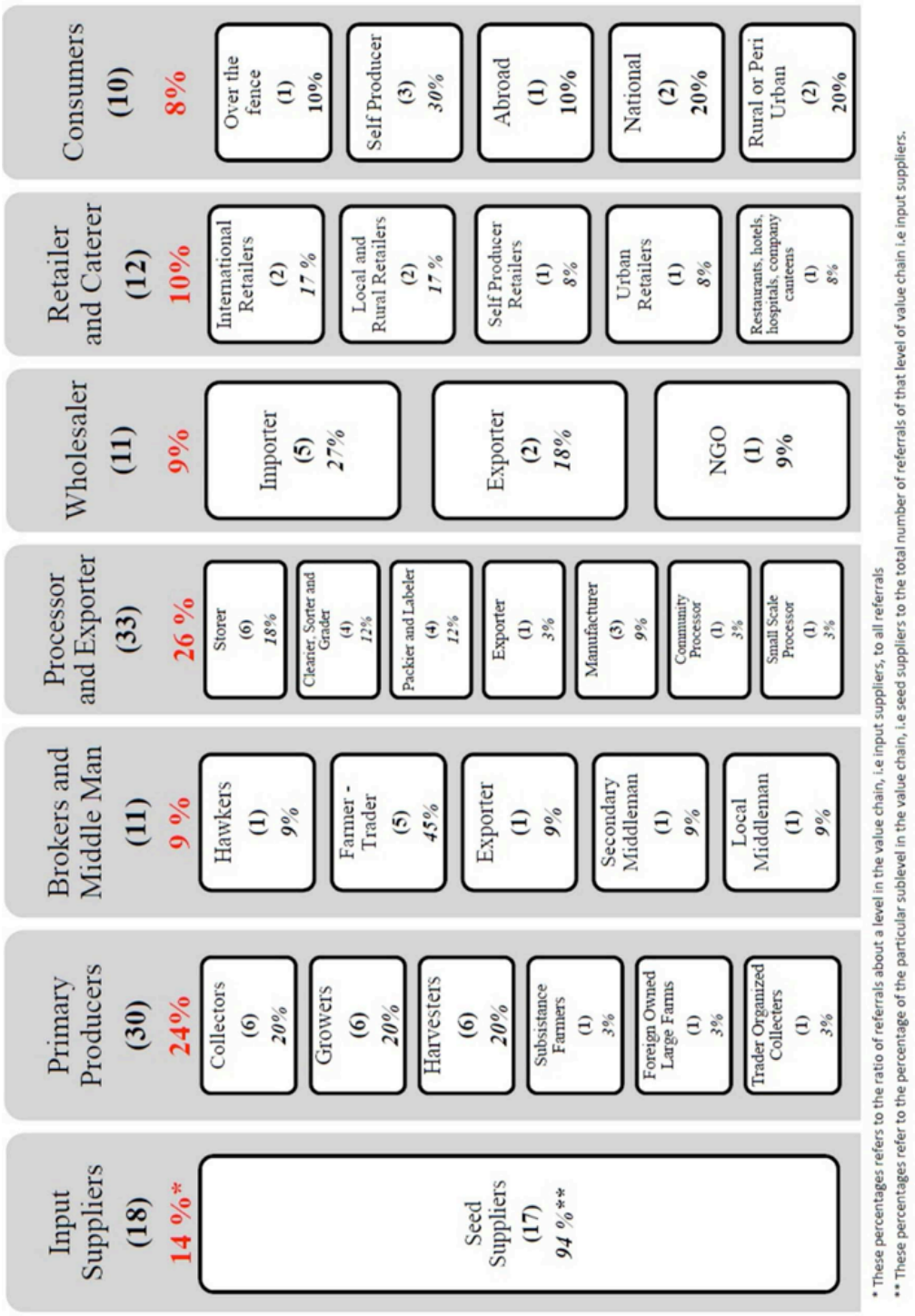
Table 6: Rationality for Research, Project and Policies on Underutilized Plants

Rationality	Frequency	Percentage
Decreasing Malnutrition	15	12.10%
Enhancing Food Security	14	11.29%
Improving Ecological Sustainability / Conservation / Biodiversity	12	9.68%
Has Some Special Health Contributing Content	11	8.87%
A Source for Rural Employment / Rural Income	11	8.87%
Poverty Reduction / Alleviation	9	7.26%
Income Generation	8	6.45%
Low Input Requirement	8	6.45%
Other Personal Uses	6	4.84%
Decreasing the Risk of Only a Few Staple Crops	6	4.84%
Complementary to Main Crops	4	3.23%
Supporting Local Culture and Identity	4	3.23%
A Niche for Small Producers	4	3.23%
Benefiting Vulnerable Groups	3	2.42%
An Alternative Taste for Consumers	2	1.61%
Strong Adaptability to Harsh Conditions	2	1.61%
Input to Other Income Generating Activities	2	1.61%
Export Potential	1	0.81%
Renewable Energy	1	0.81%
Sustainable Agriculture Potential	1	0.81%

Ninety-four per cent of the referrals made on input suppliers are on seed and provision of seeds. There is only one resource that refers to the supplier of other inputs. As primary production actors, 6 major sub actors are investigated by the resources: collectors, growers, harvesters, subsistence farmers, foreign owned large farms, and trader organized collectors.

Among the 30 referrals in primary producers, collectors, growers and harvesters have 6 referrals each and other actors are referred by just 1 resource each. Brokers and middlemen are taken as subjects in 9% of the resources, corresponding to 11 referrals. Farmer trader is the most referred in 45% of the cases and hawkers, exporter brokers, local middlemen and secondary middlemen are each referred only 1 time. Processors are the most referred actors among the resources by 33 referrals. Among the processors, storers are the largest group by 6 referrals, followed by clearer, sorter, graders, packagers and labellers with 4 referrals. Manufacturers follow the first group by 3 referrals and small scale processors,

Figure 1: Underutilized Plant Based Value Chain



community processors and exporter processors are only referred once. In addition, brokers and middleman wholesalers are referred by 11 resources. Importer wholesalers are the most referred group by 5 referrals, exporters are referred by 2, and NGOs by 1, following importers. Retailers and caterers are referred by 12 times and 5 specific types of retailers and caterers are identified: international retailers with 2 referrals, local and rural retailers with 2, self-producer retailers, urban retailers and other caterers have one referral each. Finally, 10 resources analysed consumers as actors. Self-producers are referred in 3 resources, urban and peri-urban consumers and national consumers 2 times, and consumers abroad and over-the-fence consumers are referred in single cases.

VC Interactions

VC interactions referred in the resources are under three main interaction groups: flow of goods, flow of information, and communication between chain actors.

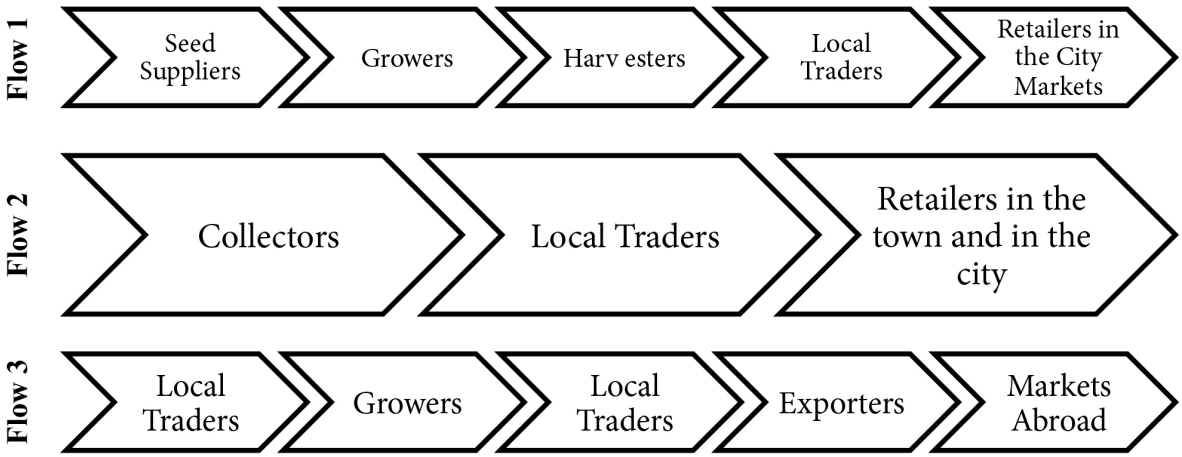
Flow of Goods

Three main flow of goods, which are shown in Figure 2, are frequently indicated in the resources. The most commonly referred flow starts with the supply of seeds to the growers. This transaction occurs in both directions: seed suppliers taking the seeds to growers and growers going to seed suppliers and buying the seeds. In some cases growers harvest their crops by themselves, but in other cases the help of whole households, relatives and other community members are used in harvesting. Then, harvested goods are bought by local traders in the production location, and local traders take the indigenous plants to retailers in the city.

The second most common good flow is a three step one. Collectors collect the plants in their natural environments, and mostly local traders come and buy the production. Then, they take the indigenous plants directly to the retailers in the town or in the city. The third most common flow of goods starts with local traders. Local traders give seed and other inputs to the growers. After the growing period, local traders come, organize the harvesting, and take the plants to the exporters. Exporters transfer the indigenous plants to markets abroad which involve processing, in most of the cases.

12 of the resources discuss information flows in the indigenous crop based value chain. As indicated in Table 7, information flows are discussed without a distinction 9 times. Other

Figure 2: Main Good Flows for Indigenous Crops



information flows covered by the resources are price information flows, 6 referrals and quantity information flows, 4 referrals.

Communication

Seven of the resources refer to the communication aspects of indigenous crop-based value chains. Among these 7 resources, 4 of them discuss communication without a distinct sub-subject. Lobbying has 2 referrals, and personal contacts, role of facilitators, and language issues each are referred once.

Table 7: Flow of Information

Information Flow	Frequency	Percentage
No Distinction	9	47,4%
Price Information	6	31,6%
Quantity Information	4	21,1%

VC Support Services

Table 8 below, indicates value chain support services. Among them, research support services have the highest number of referrals with 26 referrals. Awareness and market access and availability come next with 20 referrals. Quality control and improvement, marketing and government control follow the first three with 18, 17 and 15 referrals, respectively. Chain coordination, financial support services, extension support, technological and product improvement, land transport, primary production coordination, and business and management skills and training are the remaining value chain support services referred in the resources.

Table 8: Value Chain Support Services

Value Chain Support Service	Frequency	Percentage
Research Support	26	14,6%
Awareness Support	20	11,2%
Market Access and Availability	20	11,2%
Quality Control and Improvement	18	10,1%
Marketing	17	9,6%
Government Support	15	8,4%
Chain Coordination	13	7,3%
Financial Services	11	6,2%
Extension	11	6,2%
Technological and Product Improvement	10	5,6%
Economic Infrastructure: Land Transport	7	3,9%
Primary Production Coordination	5	2,8%
Business and Management Skills and Training	5	2,8%

VC Enabling Factors

The most referred value chain enablers, as indicated by Table 9 below, are consumer trends and competition from alternative crops by 20 and 18 referrals. Legislation without distinction crop property rights and legal standards and certification follow the first two enablers by 10 referrals. Legal standards and certification, export country legislation and trade barriers and

import country legislation follow by 7, 6 and 5 referrals.

Table 9: Value Chain Enablers

Value Chain Enabler	Frequency	Percentage
Consumer Trends	20	19,61%
Competition from Alternative Crops	18	17,65%
Legislation No Distinction	10	9,80%
Crop Property Rights	10	9,80%
Conservation Legislation	10	9,80%
Legal Standards and Certification	7	6,86%
Export (Non-Producing) Country Legislation and Trade Barriers	6	5,88%
Import (Producing) County Legislation	5	4,90%
Supplier Trends	3	2,94%
Market Concentration and Power	3	2,94%
Educational Policy and Legislation	3	2,94%
Production/Collecting Licenses	2	1,96%
Land Registries and Ownership	2	1,96%
Indebtedness	1	0,98%
Business Law	1	0,98%
Drought and Famine	1	0,98%

VC Attitudes

Value chain attitudes are referred in 5 different categories, which are indicated in Table 10. Social norms in general are referred in 10 times. Indigenous plants being poor people`s food comes second by 4 referrals. Being a part of local identity is referred by 2 times and business ethics and risk adversity in resource poor people have just one referral.

Table 10: Value Chain Attitudes

VC Attitude	Frequency	Percentage
Social Norms No Distinction	10	55,56%
Poor People`s Food	4	22,22%
Part of Identity	2	11,11%
Business Ethics	1	5,56%
Risk Adversity in Resource Poor People	1	5,56%

Evaluation

Analysis of the resources provides insights about the current situation of the knowledge level in utilization of the indigenous plants, as well as indications about the proper direction of research, projects and policies for increasing utilization of indigenous plants. Main insights and directions provided by the resources are:

Lack of conceptual convergence in research regarding utilization of indigenous plants
As indicated by Table 1, resources use 22 different definitions for indigenous plants. Additionally, 13 different adjectives and 5 names are used in describing indigenous plants. Despite that this reflects a rich diversity; it also clearly indicates the lack of conceptual convergence.

The ratio of distinct academic research in resources is quite low
Table 2 presents that only 20.3% of resources are distinct in academic research. The selection criteria substantially restrict the number of relevant resources and favours well-structured resources; however, the number of distinct resources is only 16 out of 79 resources.

Project implementation is the most important area for resources on utilization of indigenous plants
Technical reports, mostly project reports, are by far the largest resource base at 35.4%. Among 79 eligible resources, 27 of them are technical reports.

There is no methodological convergence in the research regarding utilization of indigenous crops
Reportedly, 78.5% of the resources, or 62 resources as indicated by Table 3, utilize no specific methodology or develop their own customized methodology. Moreover, the remaining 17 resources use 7 different methodologies.

Value chain analysis is the most used specific methodology
Among the resources with specific methodologies, 41.2 % of them use value chain analysis methodology.

Utilization of indigenous plants has the potential to have a positive impact in many issues for achieving sustainable development
Table 6 indicates 20 different rationalities for the utilization of indigenous plants. These rationalities cover most of the problems in achieving sustainable development and objectives of development policies.

There is a bias in the resources towards primary producers and processors or towards production and transformative actors
Figure 1 indicates referrals to different levels of the value chain. Assuming that each level has the same importance, corresponding to 18 referrals, primary producers (30) and processors (33) are over-emphasized, input suppliers (18) are normally represented; brokers and middlemen (11), wholesalers (11), retailers (11) and caterers (1) and consumers (10) are under-represented by the resources. Moreover, production and transformative actors (80): input suppliers, primary producers and processors, have given much more importance in relation to trade actors (34), brokers and middleman, exporters, wholesalers and retailers as well as consumers (11): consumers and caterers.

Other input suppliers rather than the seed sector is under emphasized
As indicated by Figure 1, 94% of the resources referred to seed sector actors. No other specific inputs are discussed in the resources.

VC interactions and VC attitudes are under emphasized
In 455 referrals about different levels of value chains, only 32 are about value chain interactions

and 18 are about value chain attitudes; whereas, value chain operators have 125 referrals, value chain supporters have 178 and value chain enablers have 102.

Making research and dissemination of information especially on identification of market opportunities, channels of marketing and quality control and improvement are the indicated direction for the research on value chain supporters
Table 8 indicates that research and awareness are the most referred value chain supporters, and they are followed by market access and availability, marketing, and quality control and improvement. Together they cover 56.7 % of all referrals regarding value chain supporters.

Demand side enablers are the most referred ones among value chain enablers
Consumer trends and competition from alternative crops are the most referred VC enablers, and together they have 37.16%, among 16 VC enablers.

Conclusion
As indicated by the comprehensiveness of the rationalities in the resources, utilization of the indigenous plants offer a huge potential for achieving sustainable development and poverty alleviation. Moreover, distinct academic research is quite limited, and utilization of indigenous plants is a hot topic for development projects. Therefore, utilization of indigenous plants offers unique opportunities in developmental research and there is a gap in making distinct research on the subject.

Current resources regarding utilization of indigenous plants have neither a conceptual clarity nor a methodological convergence. Thus, research on utilization of indigenous plant initially needs conceptual clarity and identification of a limited set of methodologies for achieving cumulative knowledge. In reaching this purpose, value chain analysis has a vast potential as a framework for research on utilization of indigenous plants.

Moreover, current resources over-emphasize value chain actors, supports and enablers, production and transformative actors, as well as primary producers and processors and neglects value chain interactions, attitudes, trade actors and consumers. Therefore, research needs balanced focus and equal emphasis on value chain interactions and attitudes, as well as trade actors and consumers.

As a framework for research, the resources indicate the following framework indicated in Figure 3 below, and it is an effective tool for enhancing research in utilization of indigenous plants.

Figure 3: A Value Chain Framework for Research on Utilization of Indigenous Plants

VC Operators	Input Suppliers	Producers, Farmers	Brokers, Middle Man	Processors	Wholesalers	Retailers, Caterers	Consumers	
VC Operators and Interactions	1. No Distinction 2. Seed Suppliers	1. No Distinction 2. Collectors 3. Growers 4. Harvester 5. Subsistance Farmers 6. Foreign Owned 7. Mid man organized gathering	1. No Distinction 2. Hawkers 3. Farmer-Trader 4. Exporter 5. Secondary Middleman 6. Local middleman	1. No Distinction 2. Storer 3. Clearing, Sorter and Grader 4. Packing and Labeling 5. Exporter 6. Manufacturer 7. Community Processor 8. Small Scale Processor	1. No Distinction 2. Importer 3. Exporter 4. NGO	1. No Distinction 2. Local, rural Retailers 3. International Ret. 4. Self Producer 5. Urban Retailers 6. Restaurants, hotels, hospitals, company canteens	1. No Distinction 2. Over the Fence 3. Self Producer 4. Abroad 5. National 6. Rural or Peri Urban	
VC Interactions	1. Flow of Goods		2. Flow of Information 2.1. Price Information 2.2 Quantity Information		3. Communication			micro-level
VC Supporters	1. Research Support 2. Awareness Support	3. Market Access and Availability 4. Quality Control and Improvement	5. Marketing 6. Government Support	7. Chain Coordination 8. Financial Services	9. Extension Services 10. Technological and Product Improvement	11. Economic Infrastructure: Land Transport 12. Primary Production Coordination	13. Business and Management Skills Training	meso-level
VC Enablers	1. Consumer Trends 2. Competition from Alternative Crops 3. Legislation in General	4. Crop Property Rights 5. Conservation Legislation 6. Legal Standards and Certification	7. Export (Non-Producing) Country Legislation and Trade 8. Supplier Trends	9. Import (Producing) Country Legislation and Trade 10. Market Concentration and Power	11. Education Policy and Legislation 12. Production / Collecting Licences	13. Land Registries and Ownership 14. Indebtedness	15. Business Law 16. Drought and Famine	macro-level
VC Attitutes	1. Social Norms in General 2. Perception of Poor Peoples Food			3. Part of Identity	4. Business Ethics 5. Risk Adversity in Resource Poor People			meta-level

Participatory design in the developing world

Issues and opportunities from case studies of adapting Nordic participatory approaches to a South African context

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Abstract
In the field of participatory design originating in Scandinavia, where approaches are developed for actively engaging local stakeholders in change processes, a major part of the research has been confined to Western contexts. The need to study participatory design in broader settings outside Western organisations has been stressed in the research community over the last decade, but later research indicates that still relatively few studies are done in developing countries. Researchers recognise that participatory design approaches cannot simply be transferred to developing country settings as there are numerous challenges for enabling participation, e.g. power distance, cultural barriers, low educational levels and geographical distances. However, participatory design offers substantial opportunities for developing countries, regarding empowerment in local communities and democratisation of change processes. Arguably, the appropriation of participatory design approaches and methods to developing world settings is an important priority in research cooperation between Nordic and Southern African universities. This work presents issues and opportunities for introducing participatory design in a South African context, based on two case studies. In the first case, concepts for new information technology were developed for a small-scale wine farm in the Western Cape, engaging multiple stakeholders on the farm. In the second case, hyper-local storytelling distributed through Bluetooth technology was explored in a socially challenged suburb in the Cape Flats area of Cape Town. Issues on appropriation of strategies and methods for participation are discussed, and directions for further research in the field are identified.

In the field of participatory design (PD), a major part of the research and debates has been confined to Western contexts (Puri *et al.*, 2004). At the biannual participatory design conference in Malmö a decade ago, the need to view participation outside Western organisations was stressed (Binder *et al.*, 2002), but later research indicates that still relatively few studies are done in developing country settings (Oyugi *et al.*, 2008). There are numerous challenges for introducing participatory design in the context of developing countries (ibid) and it is recognised that PD approaches cannot simply be transferred to developing country settings (Puri *et al.*, 2004; Elovaara *et al.*, 2006). Rather, an appropriation of the participatory design process, and the way participation is organised, is called for (Winschiers, in Oyugi *et al.*, 2008; Elovaara *et al.*, 2006). In this paper, experiences from two participatory design projects are reported. The first project has been carried out at a small-scale wine farm outside Stellenbosch, where we directed particular attention to different stakeholder perspectives in the participatory design process. The main goal of the project was to explore novel ICT solutions to support work practice at the wine farm. The second project is still ongoing, and explores possibilities for storytelling and hyper-local media distribution in a socially challenged suburb in the Cape Flats area of Cape Town. The project is a collaboration with the Reconstructed Living Labs (RLabs) in Athlone, a non-profit organisation working with capacity building and community upliftment. The goal of the project is to develop forms for information dissemination in a hyper-local context, with a particular focus on storytelling and 'street journalism'. We present our reflections on these case studies regarding the

appropriation of participatory design methods to a South African context, as example of a developing world setting.

Related Work

Participatory design (PD)

Participatory design has its roots in the 1970s movements towards democratisation at work in the Scandinavian countries, when participation and joint decision-making became important factors in relation to workplaces and introduction of new technology. The starting point was that those affected by a design should have a say in the design process. There was also a political conviction, expecting conflicts rather than consensus around an emerging design object. Two types of values strategically guide participatory design. One is the social and rational idea of democracy as a value that leads to considerations of conditions for proper and legitimate user participation. The other value may be described as the importance of making participants not only bring formal and explicit competence, but also to make their 'tacit knowledge' come into play in the design process (For background and an overview see Greenbaum & Kyng, 1991). The participatory design approaches developed in Scandinavia are normally referred to as the Scandinavian tradition of participatory design. In the United States the same perspective emerged and developed, but from a different starting point. In contrast to the Scandinavian countries, participation in change processes is not legislated in the US. Rather, the participatory approaches were developed with a primary focus on customer-centeredness, and tuning the artifact to the user's needs (Puri *et al.*, 2004).

PD in the developing world

Participatory design in developing world contexts is an emerging area of interest in the PD community. As voiced in the PD conference in 2002, there is a strong need for research into participatory approaches outside Western contexts (Binder *et al.*, 2002). But there are numerous challenges to applying PD approaches in developing countries. Oyugi *et al.* (2008) list the following issues to be considered: power distance - the perceived status between host communities and designers; cultural/language barriers; incompatibilities of PD techniques with local values and communication codes; uncertainty about appropriate methods/techniques when applying PD in multicultural settings; if project activities are dispersed geographically, high travelling costs and time zone differences make remote synchronous communication difficult; low literacy levels; poor telecommunications infrastructure, again hindering communication and follow-up from abroad.

Elovaara et al. (2006) compared two participatory design projects in Tanzania-Zanzibar and Sweden respectively. In the Tanzania-Zanzibar case, an information system for activity reporting at a local hospital in Zanzibar was redesigned. The Swedish case studied work practices and IT development in an e-government project for municipalities in a county in southeast Sweden. In comparing the projects they found differences in participation, scene, location and technological skills. Due to the nature of healthcare and lack of human resources, participation in the Zanzibar case was constrained since ongoing work and emergency cases have to get priority. In the Swedish case, the municipalities had experience of being part of research and development projects, and full participation was taken for granted. In terms of scene, the Zanzibar case was of larger scale with more participants in a hierarchical organisation, making rescheduling of project activities difficult, as they had to be cleared by

high authorities. In contrast, the Swedish case involved relatively few participants, and with long-term experience in IT use. The geographical locations obviously differ, with Zanzibar having limited technical infrastructure and a short history of computing, as opposed to the Swedish infrastructure and politically formalised grounding for participation. Finally, technological skills differed. In Zanzibar, there is a lack of basic computer skills, virtually no experience of IT use and a poor electricity infrastructure, limiting the use of computers. In contrast, Sweden has stable technical infrastructure, ongoing computerasation in working life in general, and political initiatives promoting access to technology. From comparing the two cases, the researchers managed to create a space for agency for participants in both cases, but it was evident that participation has to be negotiated and adapted to the local setting, stressing that PD approaches cannot simply be transferred to developing country settings. In the same vein, Puri et al. (2004) presents three case studies where participatory approaches have been applied in the design and implementation of health information systems in South Africa, India and Mozambique. The three cases were linked as part of a broader action-research program – the health information systems project (HISP). In the South African case, a child health community-based information system was developed for an under-resourced rural area; a reporting system based on district health information software (DHIS) for primary healthcare was prototyped and implemented in India; and a similar DHIS application was developed in the Mozambique case. The underlying strategies used were of participation and capacity development.

While the capacity development strategy was similar across the three cases, the participatory strategies differed. The South African case focused on embracing traditional forms of participation and communication in the local rural culture. It involved, for example, song, dance and poetry as traditional communication channels; having meetings in the local language in convenient places with trusted people; and in general subscribing to *ubuntu* – the principle of collective personhood and morality. A rigid hierarchical bureaucracy formed the setting in the Indian case, non-conducive to self-initiated bottom-up processes. According to Puri *et al.* (2004), in such a setting, participatory processes have to be initiated in the higher levels of the organisation and then gradually be nurtured over time. Finally, in the Mozambican context, university academics took on a mediating role, acting as a bridge between health bureaucracies on the one hand, and the communities and local health workers on the other.

Across the three cases, a strategy for capacity building and creating an enabling environment to facilitate participation were employed. This involved establishing forums for participation that suited the various groups, securing access to information, and providing sufficient training in the projects. Puri *et al.* conclude that, although a similar system (DHIS) was developed in all three cases, and capacity development was a viable strategy, the participatory approaches were significantly different. In contrast to a Western perspective, where high literacy rates and reasonable infrastructure can be assumed, Puri *et al.* maintain that participatory approaches in developing countries must be behavioral, and the details of participatory approaches adopted to the local context. Consequently, they also call for more research that goes beyond theoretical and ethical arguments, and discuss in detail the process of participation undertaken in information systems development.
Many PD research projects in developing countries focus on rural settings, barriers for participation, and how to enable and facilitate participation, e.g. through integrating activities

and values from local culture (see Puri *et al.*, 2004; Elovaara *et al.*, 2006; Camara *et al.*, 2008; Winschiers-Theophilus *et al.*, 2010). In contrast, the case studies discussed in this paper are from a developing country (South Africa), but unlike most PD research projects in the developing world, the actual project settings are not radically different from Western world contexts. The first case study is from a wine farm in the Western Cape, where operations are fairly similar to European wine farms. The second case study is from a socially challenged suburb in the Cape Flats area of Cape Town, troubled by unemployment, drug abuse, health issues and criminal gang activity. Although problems are severe, compared to suburbs in some European cities, the differences are arguably more a matter of degree rather than nature. Also in this paper, following the suggestion by Puri *et al.* (2004) above, we focus on the detailed process of participation.

With this background, this paper addresses two main issues. Firstly, if we look at the process and details of participation in PD projects in developing country settings where differences to Western contexts are less prominent, would the same barriers for participation still be present? Secondly, an issue prominent in PD research for developing countries is the need to adapt established participatory approaches, and the way participation is organised in developing country settings (Winschiers, in Oyugi *et al.* 2008; Puri *et al.*, 2004; Elovaara *et al.*, 2006). One of the researchers has been part of developing various methods and techniques for participatory design workshops, with one goal being to promote a broad engagement from relevant stakeholders in the design process (see Brandt and Messeter, 2004; Brandt *et al.*, 2008). A second issue explored in this paper is therefore how we can adapt Western PD methods to developing country settings.

Case study 1: Designing IT for participation across work roles in wine production

The first case study took place on Goede Hoop, a small independent wine estate which forms part of the Bottelary Ward, situated close to Cape Town, Western Cape, South Africa. The Goede Hoop Farm was bought by the Bestbier family in 1928 and the farm has a rich history. Pieter Bestbier is the third generation private owner and most employees are permanent, with some of them living on the estate.

There have been several studies of ICT deployment in the wine industry over the last decade (Burrell and Brook, 2003; Matese *et al.*, 2009; Cunha *et al.*, 2010), but typically from other perspectives than participatory design. Most of these studies focus more on technological opportunities than user needs or studies of work practice. However, there are studies of ICT in wine farms that focus on a user perspective. Tembo (2008) reports users' lack of ICT skills, low educational levels and illiteracy as major barriers for using ICT on wine farms as well as for contributing to developing systems. Also, for an ICT solution to be successful it should be used by all workers (ibid), an observation that underlines the importance of engaging multiple stakeholders in designing new technology. A recent study of ICT in agriculture emphasised the importance of focusing on the human element in work practice. Cs6t6 (2010) notes lack of 'user-centredness' and overcomplicated systems as a reason for slow uptake of ICT in agriculture, and argues that the key challenge is to acknowledge the differences in farming practice due to cultural background, local community, and strategies for managing information.

A main focus in this case study has been to highlight potential differences in perspective

among the four different stakeholders involved: the wine farm workers; the foremen for these workers; the farm manager; and the farm owner. Using established methods in the field of user-centered design (see Ylirisku and Buur, 2007), an ethnographic study of work practice at the wine farm was conducted using video recorded shadowing and interviews. After each shadowing session, we wrote down our main observations on post-its and organised them into an emerging map of themes. The video material was then analysed, guided by the identified themes. Video is an important tool for understanding complex work practices from multiple perspectives since it enables capturing activities as they unfold over time. As a medium, video allows the portrayal of fictitious futures, thus displaying the same malleability as clay does for the industrial designer (Ylirisku and Buur, 2007). However, ethnographic studies typically produce vast amounts of video material, making analysis resource intensive. A method allowing a design team to cover a bulk of video material in a short time is the video card game originally presented by Buur and Söndergaard (2000). Although not using a game to structure design related activities, in this project we have used video cards to evoke stakeholder perspectives in a participatory design case study.

Workshop 1 – Analysing work practice

A goal in the first two workshops of the project was to evoke and highlight similarities and differences in perspectives between stakeholders. In the first workshop, we worked with three stakeholders – a foreman for the vineyard workers, the farm manager and the farm owner. A set of video cards was produced for the workshop as work material. Video cards should preferably contain visual activities and communicate on a non-verbal level (Ylirisku and Buur, 2007). With this guideline, 28 video clips were selected for producing video cards, each with a picture of the activity and a reference number on the top half, and designated space for comments on the bottom half. The video cards were used to build an understanding of the work practice from different stakeholder perspectives, although not in game format. A separate set of video cards was provided for each stakeholder. First, the three participants viewed the 28 video clips together, one after the other. We deliberately did not encourage them to discuss the videos, as we wanted to capture their reflections without influencing each other. Rather, after viewing each video clip they were asked to write down anything of significance to the work practice from their perspective. We then asked them to label each card and group them into piles. In the remainder of the workshop we facilitated building scenarios of the current practice using the video cards. Here we allowed the participants to add extra cards if they felt that anything was missing. Many activities cover more than one day, and the scenario building allowed the participants to describe the complete processes, where we often had only seen fragments of the process during the shadowing.

Analysing workshop results: comparing perspectives

Analysing the results from annotation and grouping provided some first indications of differences in stakeholder perspectives. We first laid out the 28 cards in three rows, one for each stakeholder, to compare annotations across stakeholders. Our analysis revealed three patterns in how stakeholder annotations related to each other, indicated as A, B and C in figure 1, and exemplified in figure 2. The titles in figure 2 come from the video clips and were not printed on the actual cards.

In pattern A (fig. 2), there was little or no overlap regarding the annotation content, which we interpreted as relatively clear differences between how the stakeholder viewed the activity in

the video, reflecting their different work roles. The example in figure 2 shows how the owner uses the word 'record keeping', and indicates its importance for the foreman's (operators) understanding of the calibration of the spraying equipment on the tractors. The farm manager has a responsibility to keep calibration information up to date, to avoid mistakes in spraying. Finally, the foreman uses information on a shared notice board in the workshop to mix the right amount of pesticide. In pattern B there was some overlap in annotation content between the two bottom rows (farm manager and foreman). We interpreted this as converging perspectives between farm manager and foreman, which seemed natural since these were activities where they cooperated.

Figure 1. Layout of annotated stakeholder video cards. Yellow (top row) representing the owner, gray (middle row) the manager and blue (bottom row) the foreman.

In the example (fig. 2) the farm manager refers to his workers as the spray people and the foreman explains that the manager documents what the team has sprayed. The owner is not directly involved with record keeping or managing the spray team, and therefore it makes sense that he rather clinically refers to the activity as 'spray program'.

Finally, in pattern C there was some overlap in annotation content between all stakeholders. This pattern was slightly surprising and more difficult to interpret. We noted that in some cases it happened for quite mundane activities, e.g. the farm manager contacting the foreman over radio, or using a phone in the office. However, in five occurrences, it involved work activities round irrigation of the vineyards. In particular, the farm owners' annotation reflected a perspective close to the other stakeholders, potentially signalling another level of involvement that surprised us. Our tentative interpretation was that this pattern potentially could indicate activities or areas of the work practice, where stakeholder roles, work organisation or management goals were less clear.

Workshop 2 – Design openings and focus

At the beginning of the second workshop, we laid out examples of the three patterns on a table for discussion with the three stakeholders, which led to two findings. We explained the basic patterns, and elaborated our interpretations of patterns A and B. We did not explain our interpretations of pattern C, but rather asked the three stakeholders for their reflections. It turned out that their interpretation of the repeated occurrence of pattern C for issues on irrigation was that it indicated an immediate practical problem of high priority. If there are issues with irrigation – from less dramatic things like a tap left open or maintenance needed, to emergencies like a burst pipe – there is a matter of urgency as water is an important and scarce resource for the farm. Later in the discussion we put forward our own interpretation of pattern C: that stakeholder roles, work organisation or management goals may be less clear in the case of irrigation. This was discarded by the farm owner, who again stressed that

if a video card illustrates a practical problem, in contrast to e.g. planning issues or routine work, there is less difference between their roles.

To summarise the *first* finding from workshop 2, our interpretation of the stakeholders' reflections on pattern C was that, rather than being an undermanaged issue, it was a case of collective responsibility across the stakeholders. Arguably, the repeated pattern C for irrigation issues may be viewed as an important aspect of the work practice where all stakeholders are prepared to take action if needed, thus playing down differences between stakeholder perspectives. Consequently, our conclusion was that, unless illustrating clearly mundane issues, pattern C seemed to indicate issues where stakeholder roles were levelled because there was a common strong concern, and as such represented a potential design opening.

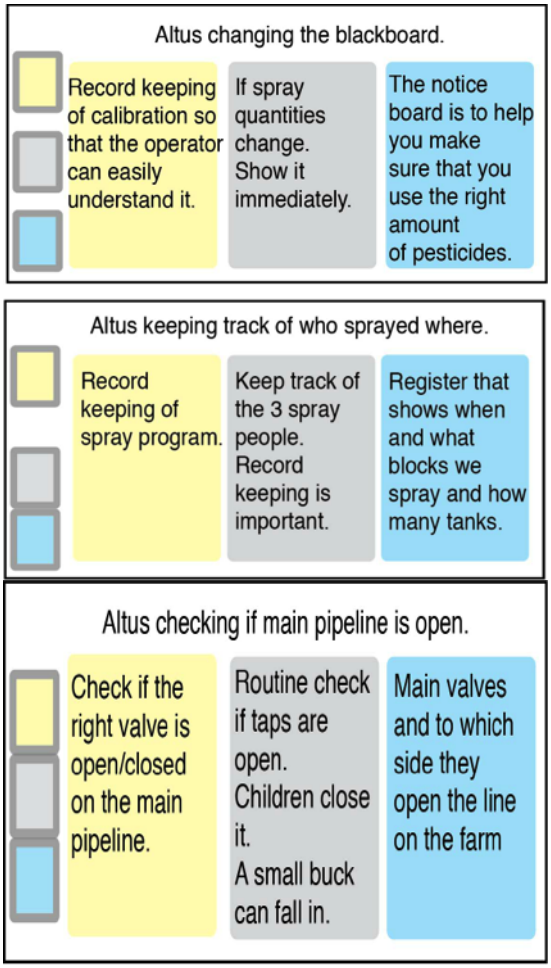

Figure 2. Three annotation patterns: A (top) – no overlap between annotations; B (middle) – overlap between the two bottom annotations; and C (bottom) – Overlap between all three annotations.

The farm owner further observed that many of the pattern examples presented indicated a good understanding of the work practice. He suggested that if certain key issues for the farm operation could be traced in all three cards – e.g. efficiency or safety – this signalled a good understanding of the work activity across organisational levels. He used a video card labelled 'Hennie measuring phosphate' as one example to illustrate this point (fig. 3). Although the annotations are very brief, arguably they indicate a shared understanding of safety from different perspectives. A second example pointed out by the farm owner was a video card labelled 'Hennie adding chemicals to spray tank', with the three annotations 'mixing of spray chemicals' (farm owner), 'the correct amount' (farm manager), and 'first measure then mix' (foreman). It is the manager's responsibility to make sure the quantity is correct, which relates to efficiency. Quantity errors or bad calibration of the spray pump affects efficiency and indirectly, cost. Hence, according to the farm owner, it is important not only to know your tasks but to also know why they are done.

To summarise the *second* finding from workshop 2, the laying out of cards also seemed to help indicate work activities where there was a shared understanding of underlying principles related to the work task, e.g. efficiency or safety. Unfortunately, the farm manager and foreman were less active in discussing these examples, making the discussion biased towards the farm owner's perspective.

Combining Perspectives

Another activity where new ways of combining perspectives was explored was the aforementioned scenario building, in connection with identifying design openings and directions for further design work. In discussions with the farm manager and foreman, the process of spraying the vineyards was selected as the first direction for the continued design work. Together with the farm manager and foreman, we used the video cards to describe the complete spraying process in chronological order. Thus, in this step we switched from analysing the elements of work practice to constructing new representations of this practice. A rough storyline of the spraying process was produced in the first workshop, which was further elaborated in the second workshop. Relevant video cards were selected from both stakeholder perspectives, and then combined into one storyline. For task steps carried out by one of the stakeholders, we only used the card for that stakeholder. For steps involving cooperation and joint decision making, we laid out both cards in the storyline.

In the second workshop, when the storyline had been elaborated, we asked the stakeholders to divide the storyline into chunks and label the chunks with verbs. The final layout is presented in figure 4, with ten chunks going from left to right, and cards within chunks read from top to bottom. Since our shadowing did not cover the complete process there were also gaps in our description. In these instances we asked the stakeholders to describe missing steps on blank cards which were added to the storyline (indicated with frames in fig. 4).

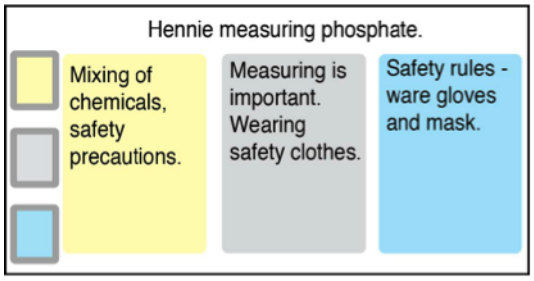

Figure 3. Shared understanding.

During the laying out of the storyline, only the farm manager added blank cards, but we noted that he confirmed each card with the foreman. After completion, the stakeholders spontaneously noted that the result was a good summary of the process. We then asked the stakeholders what chunks in the process were most important from their perspectives. The farm manager indicated the chunk labelled 'prioritising.' This is a step where the farm manager surveys the vineyards and decides which ones to spray next. The foreman selected the chunk labelled 'mixing and measuring', where the liquids for spraying are measured up and mixed, which is the most critical step within the foreman's responsibility.

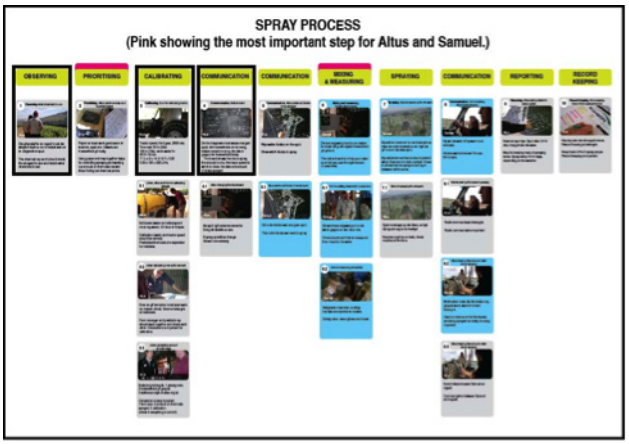

Figure 4. Combining the perspectives of farm manager (grey) and foreman (blue) in a 'storyline' for the vineyard spraying process.

In summary, producing the storyline for the vineyard spraying process helped us to highlight where the work tasks and decision making for the two main stakeholders intersected. Our project aimed to design concepts for work support and cooperation across

stakeholder roles. Thus, the combined storyline became a valid and fruitful starting point for further design work in the project.

The Visual Calculator

Out of a number of preliminary concepts, a concept named the 'visual calculator' was selected for further elaboration. The visual calculator is a planning and reporting tool that uses a visual overview of the wine farm as the main vehicle for presenting information. It supports work tasks for all three stakeholders, but the case study focused on the task of pesticide spraying in the vineyards, as this was a prominent activity at the time of the study. After visual inspection of the vineyards, the farm manager can use the tool to calculate the amount of pesticides needed, and plan the spraying. The foreman can use the tool for presenting the daily work tasks to the vineyard workers, providing them with a better understanding of the farming process. Finally, the farm owner uses the tool to get an overview of costs and activities.

The concept was presented to all three stakeholders in a workshop. It was then elaborated in collaboration with the stakeholders, and in particular, with the farm manager. Mock-ups were used to elaborate the details of the interaction (fig 6 shows the farm manager interacting with a projection of a sketch). A sample screen of the final prototype is shown in figure 7.

Results

In summary, the first case study arguably illustrates that a developing world context not only may introduce barriers or differences between designers and users, but also between different stakeholders. The vineyard workers typically mainly speak Afrikaans and the literacy level is relatively low. The foreman therefore not only manages their work, but to some extent also acts as a bridge between the vineyard workers and the farm manager. In our video card analysis, we could further identify differences in perspective between the foreman, the farm manager and the owner. Arguably, the cultural gap between the vineyard workers and the farm owner is substantially larger in this work setting than on the average farm in a Western country. These differences in culture, language, and work practice between stakeholders have to be accommodated in the participatory design process. It would have been even more interesting to also bring the vineyard workers into our analysis of the work practices on the farm, but this was not possible due to their workload at the time period of the study. However, based on the results from the workshops, we suggest that working with separate sets of video cards for stakeholders, that are annotated, and later combined and compared, may highlight perspective differences as well as shared understandings between stakeholders.

Laying out the video cards in parallel rows, one for each stakeholder, and visually indicating the content overlap in annotations, provided us with an overview showing to what extent stakeholder perspectives were separate or overlapping in the

Figure 6. The farm manager interacting with a projected sketch of the Visual Calculator.

various aspects of the work practice. Furthermore, comparing annotations across stakeholders also helped indicate work activities where there was a shared understanding of underlying principles related to the work task, e.g. efficiency or safety. Finally, we also engaged the stakeholders in producing a 'storyline' for a specific part of the work practice – the vineyard spraying process – by combining their annotated video cards for the work steps included. The final storyline (fig. 4) helped us to highlight where the work tasks and decision making for the two main stakeholders intersected.

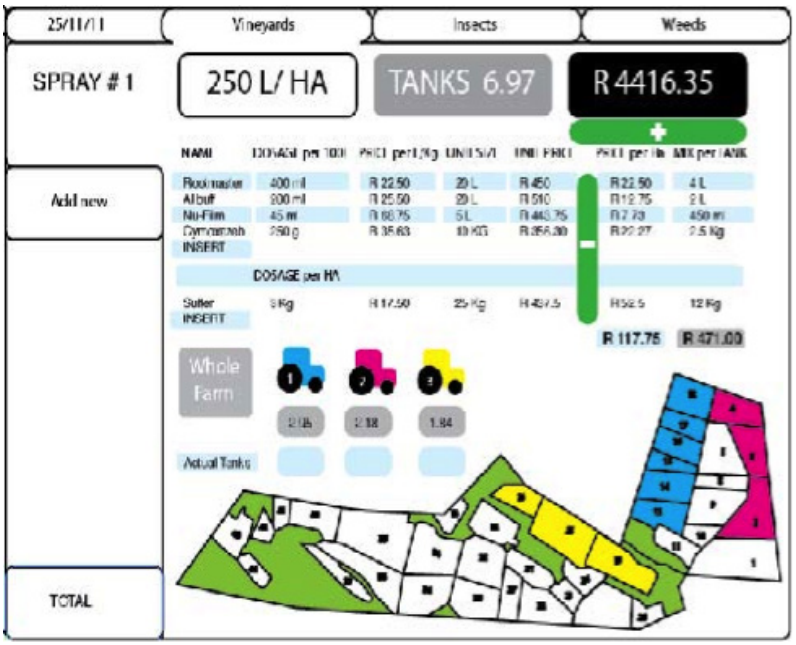

Figure 7. A sample screen from the final prototype version of the Visual Calculator.

Case study 2: Hyper-local storytelling in a socially challenged suburb

The goal of this ongoing project is to explore the use of hyper-local grassroots media for community empowerment in the suburb of Athlone in Cape Town, South Africa. Athlone is one of the older suburbs in the Cape Flats area of Cape Town that was created during forced removals from the city centre in the 1950s. Its population of 45,000 is predominantly coloured, and it is a socially challenged suburb with many problems related to drugs and gangsterism. The project studies the sourcing, editing, distribution and consumption of hyper-local news and stories in Athlone, with a general goal of supporting the community. It is a collaboration with RLabs (http://www.rlabs.org), a local organisation working with community upliftment through education and training in life skills, computers and social media. Through RLabs, four 'street journalists' were recruited for the project – two women, one younger and one older, and two young men. They will receive training in journalism and basic computer tools for editing. Next, they will source news, stories and information that will be edited in formats suitable for distribution to cell phones, using Bluetooth technology. The media produced in the project, and the media consumers' response to the material, will be collected and analysed. This is work in progress and here we only report results from the startup phase of the case study. First, the technology for media distribution is described. This is followed by a brief description of the startup activities: two workshops and a self-reporting exercise. The preliminary results from these activities are then brought into a final discussion on the participation process, based on both case studies.

Workshop 1 – Mapping Athlone

As a startup activity for the project, we ran a two hour workshop with the four street journalists, and the RLabs project manager. The purpose of the workshop was to introduce the project, and to get an overview over Athlone, its inhabitants, the different subdivisions

of the suburb, and significant places in the area. Using the satellite view in Google maps, we had prepared a map covering Athlone, printed on twelve A4 sheets. After introducing the project, the first task of the workshop was to put the twelve A4s together to form a large map of Athlone (fig 8). This step took a little longer than we expected, possibly due to the participants not being used to Google maps satellite view, or aerial photography altogether. When the map was done, we asked them to mark where they live, using small adhesive labels. The next step was to identify spots of interest in Athlone (fig 9). We asked the participants to identify and mark any spot of significance. Upon their question, we confirmed that they should include spots with illegal activity. In a period of 1½ hours, 75 spots were marked on the map. We asked the participants to put a small adhesive label on the map for each spot and number it. As spots were marked, a list of the numbers was produced with a short description (one sentence) for each spot. Each number was also highlighted on the map using a marker, to make them stand out.

We noted that the participants quickly assumed different roles in the process of identifying spots. All participants, including the project manager, took an active part in identifying spots, although the older woman and the project manager were a little more active. They basically started from where RLabs are located, which is near the north border of Athlone, and worked their way through each part of the area in a circular pattern around the map. During the identification of spots it seemed they often became unsure of where particular spots were located, again possibly because of little exposure to Google maps and aerial photos. They often started at an identified spot, and traced the map along roads to determine the location of other spots. This "walking of the streets" seemed to be a strategy to locate new spots in relation to spots already identified. In addition, some labels were later relocated due to wrongly locating spots. Again, this seems to indicate a lack of familiarity with orientating themselves using paper maps, or computer-based tools like Google maps.

The older woman was more leading in pointing out spots on the map, although all participants were active in talking about them. One participant took the role of placing an adhesive label for the spot and numbering it, while another one highlighted each spot with a marker. The project manager took the role of adding each number to the list with a short description. Thus, the collaboration in identifying spots went very smoothly. Most of the spots with illegal activity were readily located and marked, but in some cases the participants would talk about a spot and then hesitate to mark it on the map. In excerpt 1 from the video material (see fig 10), the older woman identifies a drug den but does not mark it. She then moves on to ask the others about an adjacent park area. The other journalists and the project manager did not object or comment the omission. Four minutes later, one of the researchers brought the attention back to the drug den by specifically asking why it was not marked, as shown in excerpt 2 (see fig 11). From this excerpt, it appears that R was reluctant to mark the drug den because she feared that information about it being identified on a map somehow could reach the drug dealer, and get her in trouble. When we assured them that the map would not be publicly displayed anywhere, they marked the spot and added it to the list.

After marking the spots, we then asked the participants to go through the list and describe the spots to us, one by one. During this process we also asked them to put a blue circle with a marker around spots associated with positive activity, and a red circle around spots with activities that were negative, i.e. illegal or bad for the community (fig 12). Fifty-eight spots

were marked as positive and seven were marked as negative. To our surprise, ten spots were marked as both positive and negative, e.g. a superette which was also a spot where drugs were sold, and a sports field that was also a hang-out for gang members.

Workshop 2 – Exploring Athlone

One week after the first workshop, we arranged a second workshop where we embarked on a tour in Athlone. Unfortunately, the older woman was unable to attend the second workshop. We first met at RLabs where we studied the map produced in the first workshop, and the participants discussed what was the best route to go and visit the spots. We decided to include all spots, and expected the tour to last around one hour. The plan was to go around in a van, so that we all could discuss what we saw as we moved along. However, it turned out that the van was unavailable so we had to go in two cars.

This was a major drawback as we were unable to discuss in the full group while moving. Instead, we stopped and got out of the cars at selected spots, and the project manager spontaneously took the role as "guide" to describe what we were seeing. During a little less than two hours we visited, or passed by, all the identified spots on the map. During the trip we did four stops to get out of the vehicles and talk about the location. Each location was photographed and video filmed. We also filmed during our drive, although we tried to be rather discrete, not drawing too much attention to our activities. We still noted that one

Figure 8. Laying the puzzle of the Athlone map.

Figure 9. Marking significant spots.

person saw our cameras and apparently went to tell another person what he had observed. We would have preferred to stop at more spots, but unfortunately the project manager had other appointments that forced us to speed up the tour. However, the tour gave us a better understanding of the neighbourhood and the spots marked on the map.

Self-reporting diaries

As a final step in the start-up phase, we set up a simple self-reporting activity, without any technology, to get a first inkling of the kind of information that could be sourced by the street journalists in the community. Each street journalist was supplied with a notebook and pen. They were then asked to write down any information or stories they considered newsworthy or interesting from a community perspective. This is an ongoing study that we have not seen the final results from yet, but the first round of information and news collection has already yielded interesting results. In a follow-up meeting with the street journalists, they explained

that they had started out informally interviewing people in their surroundings, asking them to share stories that could be inspirational for others in the community. The stories were edited to a short and compact format. According to the journalists, they wanted to keep the stories brief to make sure they were read to the end. A format evolved that typically presented people with a troubled background, but who managed to initiate changes and maintain a personal development towards a better life (see fig 13 and 14 for selected examples).

The stories reflect some of the most prominent problems in Athlone: broken families; the lack of good role models, and presence of bad role models, in drugs and gang related activities. By distributing stories like these, it is the hope of the street journalists to inspire other young people to stay out of trouble. Thus, in this project they are shaping their way of participating in the community, and contributing to upliftment.

The next step of the project is to complete training for the street journalists in basic journalistic methods and writing, as well as training in selected computer tools for text and image editing. In parallel, sourcing of news, stories and information will continue. As the journalists become familiar with computer tools, we will start to explore formats for editing and forms for distribution, with a focus on Bluetooth as mediating technology.

R: (Pointing with finger on the map) Somewhere around there is also a drug den, but I'm not sure what kind of activities there are... (inaudible).
R: Lammies
B: Mmm?
R: Lammies
B: Mmm! ... Still busy? particular for young males; and a strong presence of R: Yes, he is still busy, and even Rod next door
N: Lammies
R: That's his surname, Lambert, they call him Lammies.
B: (inaudible)
R: Yes, but he sells tik and all ... what is this ... I'm asking you (pointing with finger to a park area on the map).

Figure 10. Excerpt 1 from video recordings of workshop 1.

Researcher 1: You pointed somewhere here before (pointing to where R indicated a drug den earlier) but you never marked it. What was that?
Was that some..anything here?
R: That's a separation...here, it was here... oh, I
said where Lammies stay.
Researcher 1: Yeah.
R: I don't know, they could shoot me ... (chuckles)
Researcher 1: What? Researcher 2: But they will never see the map.
Researcher 1: No, don't worry about that.
R: I just know that the kids all go there, we (inaudible).

Figure 11. Excerpt 2 from video recordings of workshop 1.

Results

Our preliminary results indicate less prominent but still significant cultural issues reflected in activities during the workshops. Also, the notion of sharing personal stories in the community is apparently more attractive to the journalists than sourcing "street news". In the first workshop, we particularly noted that the participants did not seem very confident with using the Athlone map we had created (an aerial photograph overlaid with a map, printed from Google maps). Putting the twelve A4 sheets together to form the map of Athlone took longer than expected. Also, reading the map to identify spots seemed more difficult for them than expected. They "walked the streets" with their fingers, trying to find landmarks. In addition, a few labels were moved after realising that they had been put in the wrong place. Also, in working with the map they were reluctant to mark some of the spots with

illegal activity, seemingly because they were worried that involved gang members or drug dealers would somehow find out that e.g. a drug den had been identified. Finally, when we asked them to label spots as accommodating activities with either positive or negative influence on the community, we expected these two categories to be separated. However, the participants introduced a double labelling, where spots were identified as hosting both positive and negative activities. To our surprise, there were more spots identified as holding both negative and positive activity, than only negative activity spots.

Regarding the storytelling exercise, the task provided was open-ended, asking the journalists to source any information newsworthy from their perspective. It was unexpected that they would focus on capturing personal stories from young people to inspire other young community members. We could even identify a story format evolving, which arguably indicates that they believe in storytelling as an empowering activity in the community.

DISCUSSION AND CONCLUSION

PD research in developing countries is mainly carried out in rural settings, presenting several challenges for participation. In contrast, this paper presents two case studies from a developing country (South Africa), carried out in settings arguably more similar to Western world contexts. One focus has been to study the process and details of participation, and establish if characteristic challenges of PD projects in developing countries (Oyugi et al., 2008; see above under 'PD in the Developing World') can be identified in these settings. Another focus was to explore how PD methods from research mainly in Western countries may be adapted to these settings.

Figure 12. Spots encircled with blue denotes positive activity for the community and red denotes negative activity for the community. Many spots are coded in both categories.

In the first case study, designing IT for participation across work roles in wine production, we could identify challenges, but these were rather an issue between the different stakeholders than between designers and the host community. There seemed to be a power distance and, if not a cultural barrier at least a cultural distance, between the vineyard workers on the one side, and the farm manager and farm owner on the other. Arguably, this cultural gap is larger in this work setting than on the average farm in a Western country.

What we experienced in the second case study around hyper-local storytelling in a socially challenged suburb, could hardly be described as cultural barriers between the researchers and the street journalists participating in the project. Still, the unexpected unfamiliarity with the map (or rather, composite map and aerial photograph from Google maps) arguably carried significance as a difference in culture.

Rather than being a barrier, it was a reminder to us that the setting required us to be more sensitive to nuances in behavior and details of participation. A similar argument can be made for the example of the reluctance to mark a drug den on the map, supposedly for fear of trouble (fig. 10 and 11). Even if the perceived threat was presented somewhat jokingly, it may be a mistake to dismiss it as insignificant.

Clearly, in a larger perspective, the drug dealers are stakeholders in a process where RLabs are trying to facilitate change in the community and keep young people out of trouble

Peter (23) has been taking care of his mother and baby sister ever since he was in grade 8. His father left home when he was in primary school and his mother stopped working, that's when it became too much for him because the bills were accumulating and there was no form of income. Peter felt like giving up hope but thought of his sister and leaving her in his position. He the got a weekend job at PEP stores. He also began to operate with the gangsters in the community selling fruit and marijuana but never used it as an excuse to drop out of school, as making his mother proud of him was also priority. Matric was very difficult for him especially when he studied with an empty stomach days on end but somehow he managed to pull through and matriculated in 2006. Thereafter all he could think of was finding ways of making easy money by selling drugs on a regular basis.

One Sunday he took a walk to the fruit stand just to hang around with the guys but something told him "this life is not for me". As he was walking back home, he heard gunshots and that's when he decided never to return. He is currently on a 3 month probation at a packaging company and trusts that he would be offered a permanent position.

Peter's life story is truly an inspiration to me and the younger generation. His main priority is to save money for his sister's end of year matric ball instead of boosting his ego to impress his friends by purchasing his own car.

"I don't care how poor a man is; if he has family, he's rich."

Figure 13. Sample story 1 from self-reporting exercise.

She was in her last year of secondary school when she learned the truth. Mishkah Matthews found out that she was adopted at a very young age. Maurine, her mother, gave her up and left her in the care of her best friend.

Mishkah did not handle the truth very well and stayed out of school for 2 months, lived with her boyfriend, Darryl Kolbe, whom she'd been dating for 2 months. Darryl eventually persuaded her to return to school and complete her final exams.

Mishkah (22) has made a success of her life. She works for a rigging company in Cape Town. She is a mother of a beautiful son, Liam, and a wife to Darryl Kolbe. Mishkah expresses that she is enjoying every minute of being "Mrs. Kolbe" and plans on giving Liam a very good life and more siblings.

"Never give up, for that is just the place and time that the tide will turn."

Figure 14. Sample story 2 from self-reporting exercise.

through their courses, training and activities. Furthermore, the introduction of labelling spots as hosting both positive and negative activity by the participants was surprising. Our expectation was to find a clear separation between elements of illegal activity and spots with positive influence in the community. The double labelling, and the fact that there were more spots with double label than spots with negative label was not expected. Thus, illegal activity seems to a large extent to be integrated into places regarded as having a positive influence in the community. Consequently, it becomes more difficult to protect young people from exposure to drugs and gang related activity. Finally, in the self-reporting activity, the preference of sourcing personal stories that may serve as inspiration to other youngsters was a positive surprise. Our interpretation is that young people are highly aware of the problems in the community, and they are also willing to share their personal experiences to the benefit of others. Consequently, this is a direction in the case study that will be explored further.

Regarding the detailed study of participatory design activities, it may be argued that our interpretations and conclusions from these studies are revealing details about unknown practices in a culture that, in character, are quite comparable to typical Western workplace studies. However, we need to keep in mind that the underlying culture reflects values of another nature than found in workplace practices. The problems that proliferate in Athlone, with unemployment, drugs and gang activity, are severe and affect peoples' lives in a profound way. Arguably, the adaptation of PD methods needed in this regard is of a more subtle nature. We need a shift in perspective where we develop a deeper sensitivity for the cultural differences uncovered in participatory design activities, in particular regarding contexts in developing countries that are closer in nature to Western contexts.

In addition, the first case study arguably illustrates that a developing world context, even though relatively close in character to a Western setting, may introduce barriers not only between the host community and designers, but also between different stakeholders. We adapted the video cards method (Ylirisku and Buur, 2007) to accommodate differences in stakeholder perspectives. Based on the results from the workshops, we suggest that working with separate sets of video cards for stakeholders, that are annotated and later combined and compared, may highlight perspective differences as well as shared understandings between stakeholders.

To conclude, the appropriation of the video card method seems viable for settings with significant differences between stakeholder perspectives, which is often the case in developing country contexts. The appropriation of methods, techniques and approaches from the Scandinavian tradition of participatory design to developing world settings is an important priority in research cooperation between Nordic and Southern African universities. In this paper, we have presented two case studies to illustrate issues regarding challenges for participation and the adaptation of PD methods. Arguably, in contexts that are more similar to Western settings, cultural differences are also apparent in PD activities. They may not be as obvious, as in rural or more under-privileged settings, but they are nevertheless significant. The field would definitely be strengthened by more case studies that study participatory design activities in detail, and further explore the appropriation and development of PD methods. Also, a broader variation of settings studied in developing countries, including urban contexts, would provide a better grounding and stronger transferability across projects for the further development of PD approaches for developing countries.

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M4D - mobile communication for development

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Abstract
The rise of mobile communication has been remarkable. This is especially the case in developing countries. This trend serves as the background to the emerging academic field of Mobile Communication for Development (M4D) to which we devote this paper. While access is still an important obstacle, there is no doubt that the proliferation of mobile telephony in developing countries has opened up a range of possibilities and new avenues for individuals, governments, aid agencies and NGOs. However being an emerging academic field there is need for greater conceptual and methodological rigour in the conduct of research as well as theoretical and methodological development. This paper will give a background of the field, an overview of the research being carried out and the challenges ahead. The aim of presenting this paper is to explore the possibility of establishing M4D as a research priority for Southern African-Nordic cooperation.

Information and Communication Technologies (ICT hereafter) hold a key to growth and development across the world. While the evolution of ICT is notable, the rise and uptake of mobile communication has been accelerating at a remarkable pace since the turn of the millennium, especially in developing regions (Castells et al., 2006). The Centre for HumanIT at Karlstad University, Sweden, has been a driving force in establishing Mobile Communication for Development (M4D hereafter) as an academic discipline by organising the first three international conferences on M4D. Gudrun Wicander was behind the initial development of these conference series during her PhD work on mobile supported e-government systems in Tanzania (Wicander, 2011) under the supervision of John Sören Pettersson, professor in Information Systems at Karlstad University. Together with the Centre for HumanIT, to which they belonged, they organised the first conference on M4D in Karlstad in 2008. Since then the conference has been held biannually, in 2010 in Kampala, Uganda, in co-operation with Makerere University and in 2012 in New Delhi, India, in co-operation with SERD (Society for Education and Research Development). Drawing from these conferences and early works in the field, this paper aims at giving an overview of M4D.

We will begin this paper with an account of the rise of mobile communication in the so-called developing world, which is the background to the emerging field of M4D, before further discussing what is understood from the three characters in the acronym M4D. What is mobile communication (M)? What is development (D)? And how can mobile communication further such development (4)? We will end the paper by briefly attending to some challenges in the field as well as future possibilities for Southern African-Nordic cooperation.

The Rise of Mobile Communication in Developing Regions

At the end of 2010, the number of mobile cellular telephone subscriptions reached 80 per

100 inhabitants of the world population (ITU, 2011). While the developed world has levelled out at a subscription rate of 114 per 100 inhabitants, the developing world has increased from less than 5 subscriptions in 2000 to more than 70 per 100 inhabitants in 2010 (ibid.). And since the developing world in some accounts measures up to 70 percent of the world population (Wicander, 2009, p.14) this means that about 75 percent of the total number of mobile subscriptions worldwide are concentrated to developing regions (as compared to less than 30 percent at the beginning of the millennium, see ITU, 2011). In relation to landline telephony (which is actually diminishing worldwide) and internet usage, the mobile phone is the communication device par excellence in developing regions.

This rise of communication on mobile phones is largely the background to the emerging academic field of M4D. The proliferation of mobile phone subscriptions has opened up a range of possibilities and new avenues for NGOs, aid and government agencies, and has empowered people in their everyday lives. Examples from M4D conferences range from using the mobile phone for banking, telemedicine, to empowerment and equality drives in societies, to report and monitor epidemics, for education, to reinforce literacy, as well as to monitor elections, fight corruption and mobilise support for social and political change (Pettersson, 2008; Svensson & Wicander, 2010; Kumar & Svensson, 2012). But before giving an overview on how mobile communication has been used to further development, i.e. the "4" in the M4D acronym, we need to attend to the "M" and the "D". What do we mean by mobile communication and what do we mean by development?

What is Mobile Communication?

In Wicander's (2009) overview of M4D she focuses on the mobile phone, which is the devise mostly referred to in the field (see Pettersson, 2008; Wicander, 2009; Svensson & Wicander, 2010; Kumar & Svensson, 2012). The mobile phone is synonymous with the cell phone, cordless line telephone handset, cellular phone, and wireless telephone (Wicander, 2009, p.15). Telephony is largely understood here as the transporting of a voice from one place to be heard in another without the transporting of the body (Donner, 2008). And in contrast to a mass medium like the radio, where voices and sounds are broadcast from one node to many others, telephony has the possibility of being interpersonal since connected nodes (connected through typing in the unique number to the device you wish to connect with) can talk and transmit voice and sound back and forth. The mobile phone in turn is a portable device that makes this interpersonal sound and voice communication possible wherever there is a wireless network to connect the device to (Wicander, 2009, p.16). Mobile telephony is thus defined in opposition to landline and fixed telephony. In other words, we are talking about voice- and sound-based communication with at least one of the communicating nodes using a portable device, connected to a wireless network which in turn makes it possible to connect to another device in the network (portable or fixed).

Most people with a mobile phone today, in the developed as well as the developing world, use the mobile phone for more things than just telephony (i.e. voice and sound-based interpersonal communication). Mobile phones are used for text messaging, taking photographs, as well as storing and transmitting information, to mention a few other non voice- or sound-based communicative possibilities with a simple mobile phone. Hence the mobile phone is a device that lends itself to so much more than just mobile telephony. Thus it makes more sense to speak of communication through mobile phones. However, this

term could also include online communication from portable devices with internet access such as laptops, tablets and smart phones. To include such communication complicates the field of M4D at the moment, since mobile broadband subscriptions only reach 5 out of 100 inhabitants in developing regions (ITU, 2011; see also Banks, 2010)[1]. Hence, for the time being, we have to leave laptops, tablets and smart phones with internet capabilities aside when discussing M4D (even though smart phones are increasing at a fast rate in developing countries like India, (Garai, 2012)). In summary, the portable communication device mostly used in developing regions is the mobile phone, and it is used for functions other than just telephony, such as text messaging, photographing, audio- and video-playing (Heeks & Jagun, 2007).

What does this rise in communication on mobile phones mean for its users, society and culture at large? The social constructivists' approach to gender and technology studies argues that gender relations gain meaning and are realised through the use of technology (Faulkner, 2001; Lie, 2003; Mellström, 2009; Wajcman, 2010). In other words, gender and technology are shaped by the mutual relationship between them. In some respects the mobile phone reinforces existing social and gender systems but the same technology also enables a reinterpretation of expressions of gender (Wamala 2012). This could be understood from a communication ecology perspective where communication processes are understood as contextual, i.e. situated in time and place involving an interdependent network of human and non-human actors (Horst & Miller, 2006, 12ff). Within media & communication studies, changes in communication patterns have therefore often been connected to societal changes at large (Horkheimer, 1947; Thompson, 1995/2001). It can be argued, for instance, that the advent of the printing press was tied to the rise of mass society and mass culture. Recently, many scholars made a similar argument, claiming that with the rise of mobile (and digital) communication we are leaving mass society behind (Benkler, 2006; Bruns, 2008; Shirky, 2009). Changes towards mobile and interpersonal communication are happening in tandem with us entering into, what some sociologists label, late modernity (Giddens, 1991) and network society (van Dijk, 2006; Castells, 2010). The unifying cultural frameworks of modernity (such as family, church, local communities, unions, political parties et cetera) are dispersed and people become increasingly individualised, a process in which communities, personal relationships, social forms and commitments are less bound by history, place and tradition (Dahlgren, 2006). Here it needs to be clarified that accounts of late modern and network societies are primarily based on studies of the West, and might not apply to developing regions yet. However in Wicander's (2009) overview on M4D literature, adjectives such as portable, personal, simultaneous, autonomous, pervasive and nomadic are used to conceptualise the mobile phone, adjectives suggesting late modern perspectives of mobile telephony.

Media sociologist McLuhan (1968) famously argued that the medium is the message. So what is the message of the mobile phone and what kind of society is its rise intertwined with? The connected society is *the* label used to describe a society in which mobile phones are the prime mode of communication, connecting friends, family, colleagues and like-minded people (Castells et al., 2006; van Dijk, 2006). Thus, a message mobile phones are carrying with them is that we should stay continuously connected (as echoed in the well-known Nokia slogan). Here the terms *perpetual contact* (introduced by Katz & Aakhus, 2002) or

1 Interestingly the number of mobile broadband subscriptions, while being low, is still higher than for fixed broadband subscription. Hence, when the developing world will be connected, it will most likely be through mobile phones.

connected presence (introduced by Ling & Donner, 2009) capture well the larger implications of the rise in communication on mobile phones.

What is Development?

The notion *developing countries* does not refer to a homogenous group of countries, and there is no agreed-upon definition of what constitutes a developing region. There are different assessments of development, following different classifications and income categories (for an overview see Wicander, 2009, p.14). Also the term 'development' in itself is contested since it arguably springs from a modernist and polarised world view (Traxler, 2008). Taking a social, cultural and economic dominance from the West for granted, the term implies that non-western regions need to be developed. The West is the 'developed standard' and the economic, democratic and social systems should be exported to the rest of the world. But as we shall see in this paper, when it comes to innovative usage of the mobile phone, the West has a lot to learn from developing regions (not least when it comes to mobile banking). Recent economic turmoil in Europe and the US, coupled with problems with an ageing population, have also questioned the self-appointed economic world leadership of the West. And in the cultural field it is claimed that Bollywood cinema, for example, has long out-performed its Hollywood counterpart, both in terms of size, turnover and cultural impact (Skynews, http://news.sky.com/home/showbiz-news/article/15650686, retrieved 29 April 2012). We might then rethink what the terms 'developed' and 'developing' refer to. On the one hand, we have regions that have reached their peak when it comes to development and that are now starting to stagnate, whereas on the other side we have regions that are still developing in interesting and innovative ways. Our argument is that we can learn from each other and should avoid categorisations.

We find relevance in using the term 'development' in relation to mobile communication especially if we bend towards Sen's (1999) capability approach theory. Development is discussed here as a kind of freedom that lends towards the capacity of individuals not only to assess, but to have the ability to transform, their situations (ibid.). M4D can benefit from this approach, as a critical theory to apply in assessing development-related mobile communication, not the least because the capability approach takes context into account, such as the individual and social landscape within which processes of change are associated. In this way the kind of technological determinism often underlying M4D research could be prevented. To what level can development be related to access to and use of a mobile phone? From Sen's capability approach theory, it all depends on the way the technology furthers possibilities for individuals and groups to transform the specific situations they find themselves in. In the broad and complex field of development, this approach allows us to assess technology from its uses and the contexts in which it is used.

How can Mobile Communication be used for Development Purposes?

When it comes to communication on mobile phones there are those who claim that the impact that mobile phones have is as revolutionary as roads, railways and ports, increasing social cohesion and releasing the entrepreneurial spirit that stimulates trade and creates jobs (Duncombe, 2010). This indicates a more technological deterministic view on M4D. On the other hand there are those who claim that technology in itself does not lead to social change; people decide how a particular technology will be used (Hafkin & Huyer, 2006, p.3) and, depending on the political and socio-economic environment in which they live,

adapt it accordingly (Banks, 2010). The truth is, as always, somewhere in the middle of these two poles, even though research in the field of M4D until now has had a tendency to lean towards a more technological deterministic view. The key is to approach the mobile phone, or any technology for that matter, as neither good nor bad in itself (Street, 1997; Wamala, 2012). The mobile phone can be used for development purposes, as we will attend to next, but it can also be used by less benevolent actors, most notably for surveillance (Andrejevic, 2007). But this does not mean that the mobile phone is neutral and solely determined by context. As discussed previously, the co-production of gender and technology suggests that the mobile phone in its very design encourages specific patterns of behaviour from the user. As also pointed towards previously, communication on mobile phones pushes for a connected society that favours perpetual contact and a kind of connected presence. This being said, it is important to remember that mobile phones are used in different ways in developing countries compared to countries where electricity, computer hardware and internet connectivity are stable, reliable, cheap and abundant (Traxler, 2006; Wamala, 2010). Thus, cultural conditions influence usage patterns of, and attitudes to, mobile phones at the same time as we can attribute some universal properties to mobile phone use (Donner, 2008; Horst & Miller, 2010).

The proliferation of communication on mobile phones has opened up new avenues for individuals and groups to transform the situations in which they find themselves, improving social, human and economic conditions. Examples range from using the mobile phone for telemedicine (reaching expert consultation in remote and rural areas), to reporting and monitoring malaria outbreaks (through software adapted to mobile phone interfaces), in agriculture (to receive information about input dealers, market prices and fertilisers), for mobile money (to innovate new ways of meeting the transaction needs of ordinary people), to learn English and reinforce literacy, as well as to monitor elections, fight corruption and mobilise support for social and political change. We will attend to these uses next starting with mHealth.

mHealth

Communication on mobile phones plays a significant role in health-related areas. The mobile phone could be the device of choice for communication where users receive health care information (Istepanian et al., 2009) concerning all kinds of issues from childcare and hygiene to HIV and tuberculosis (Wicander, 2009, p.46). Mobile phone use has been studied in a range of health-related projects including: 1) improving dissemination of public health information such as AIDS awareness, disease outbreak and prevention messages (Razzaq & Sayed, 2008; Hoefman & Bonny, 2010; Garai, 2012; Khanna et al., 2012); 2) facilitating remote consultation, diagnosis, and treatment (Kuntiya & Mavunduse, 2008; Razzaq & Sayed, 2008; Kuntiya, 2010); 3) disseminating health information to doctors and nurses (Atnafu et al., 2010); 4) managing patients (Atnafu et al., 2010); 5) monitoring public health (Atnafu et al., 2010); 6) increasing the efficiency of administrative systems (Kinkade & Verclas, 2008; Atnafu et al., 2010); and 7) information on drug use (Chaudhury et al., 2012).

Studies have also shown that communication on mobile phones provides data to health workers so they can treat patients better, and also for patients so they can make informed choices about their health, as well as using the mobile phone to collect data in order to improve patient and public health management (see Wicander, 2009: 46). A call on the

mobile phone can be used to make a doctors appointment, call for help, get a diagnosis and medical advice, send prescriptions for medication, check if medicines are in stock, for intake reminders et cetera (ibid.). For a number of recent case studies in mHealth, such as using mobile phones for breast cancer patients, for tuberculosis patients, for male circumcision (for reverting female to male HIV infections) and for reproductive health see papers from the 2012 M4D conference (Kumar & Svensson 2012, pp.7-118).

mMoney

In the Philippines people have been able to conduct their basic banking tasks via mobile networks since 2006 (Mendes et al., 2007). One notable early successful m-banking initiative is Globe Telecom in the Philippines (Donner, 2007). Communication via text messages (SMS) for banking purposes started with the passing of top-off credits among subscribers in exchange for services (see Lallana, 2004) and with the development of mobile currencies, m-payments/m-currency/m-money such as G-Cash from Globe Telecom and Smart Money from Smart Communications (Mendes et al., 2007). Examples of services are *Text a Payment* (users making loan payments using mobiles; once the m-money is in the mobile account, the user can SMS the loan payment and the transaction is protected by a PIN) and *Text a Deposit* (users making deposits into accounts with a rural bank using mobiles phones, deposit instructions are encrypted and password protected, (Mendes et al, 2007)).

Africa, which lacks financial institutions in rural areas more so than in the Philippines, has an even greater need for financial services (Wicander, 2009, p.54). Among the several m-banking services (Wicander, 2009, 54ff for overview) the most well known is in Kenya with the popular M-PESA (Donner, 2007). M-PESA was launched by the Commercial Bank of Africa, Safaricom and Vodafone in 2007 as the first m-banking service in East Africa, with over 100,000 users during the first three months (Wicander, 2009, p.55). M-PESA allows users to deposit, withdraw and transfer money to another M-PESA customer, to buy Safaricom pre-paid airtime and to manage their M-PESA accounts such as checking the balance, calling for support, changing their PIN code et cetera (ibid.). Registration is free for Safaricom subscribers, and agents are Safaricom dealers or other retailers with a substantial distribution network such as petrol stations (ibid.). Their key tasks are to register M-PESA customers, to assist with the depositing of cash into M-PESA accounts, to process cash withdrawals for registered M-PESA customers and to process cash withdrawals for those who are not registered customers (ibid.).

Mobiles are not only used for banking purposes. In the M4D literature there are examples of how mobile phones are used also to boost business in music (Impio et al., 2008), education, and health et cetera (see papers from the latest M4D conference, Kumar & Svensson, 2012, pp.273-374).

mLivelihood

Communication on mobile phones is also used to improve the farming sector (Wamala, 2010). The mobile phone can be used for inventory management and market search. Fishermen have used the mobile phone to access information about prices, how much fish to catch and which market to take it to (Abraham, 2006; UNCTAD, 2008). Commercial trading platforms have been established, allowing users to request price data and trading information via SMS (ibid.). Such information obtained in real time allows users to improve their negotiating

position and increase their earnings. Thanks to market efficiency fishermen's profit rose by eight percent and customer prices fell by four percent (UNCTAD, 2008). Hence, enhanced flow of information can help local markets to work more efficiently.

Mobile phones have been used for weather information for farmers (UNCTAD, 2008; Wamala, 2010). Timing of the annual onset of monsoon rains is crucial for farming communities as it dictates when to sow crops and when to take products to market (Wamala 2010). Market inefficiencies due to lack of information result in a waste of up to $12 billion of fruit and vegetable production (UNCTAD, 2008). Local-language information on weather and market prices can be provided through text messages to mobile phones. Farmers can regularly receive and send vital information, and translate information into local languages using local databases of mobile phone numbers (UNCTAD, 2008). Particular information about market conditions is used by farmers in developing regions, hence reducing travel (ibid.). Some operators provide trading facilities on mobiles phones, allowing sales directly from the farm (ibid.). By checking prices, farmers can avoid paying excessive commissions to intermediaries, and the improved position makes them able to negotiate with full knowledge of market and price conditions.

A study from Bangladesh showed that more than half of the farmers used mobile phones in receiving agricultural information (Kashem, 2010). A study from Tanzania showed communication on mobile phones affected the entire cycle of farming, from preparation, farming, harvesting and marketing, resulting in increased opportunities and reduced risks (Matotay & Furuholt, 2010) making farmers positive towards using mobile phones (as Shankaraiah & Swamy's 2012 study in India shows). Mobile phones have also been used to empower female farming cooperatives (Vincent & Cull, 2010) because through the technology women negotiate market prices collectively thereby removing unashamedly fraudulent middlemen (Wamala, 2010). The same technology enables women to share information regarding their farming practices, and having direct access to information that does not go through their husbands continues to provide women with some level of autonomy (ibid.). The mobile phone can also attract youth to agriculture serving as intermediaries between farmers and farming research centres (Manolo & Van de Fliert, 2012).

mGovernance and mParticipation

The so-called Arab Spring has ushered in an era of enhanced citizen participation in governance issues. Social media tools and text messaging features on the mobile phone continue to assist towards physically amassing citizens in political demonstrations. Besides crowing gathering, the mobile phone assists in making governments accountable to citizens as the technology insists on a bi-directional exchange. This could be labelled as *sousveillance* (Bakir, 2010), i.e. using the mobile as a tool for bottom-up monitoring of the state by the citizens, such as human rights reporting (Wagenaar & Rieback, 2010; Thinyane & Coulson, 2012), election monitoring (Hellström & Karefeldt, 2012) and fighting corruption (Hellström, 2010; Talukdar, 2012). Thus, access to mobile phones has improved people's situation in several areas providing political news, organising political resistance and even deposing a president (Rheingold, 2002).

Concerning mGovernance, India has been leading in developing government services through mobile phones such as sending and making information available to citizens (Karan

& Khoo, 2008). SMS has been used for fair distribution of food, for government officials to send reports from the field and to monitor healthcare delivery (Garai, 2012). In particular, the state of Kerala has been implementing text messaging in practically everything, from sending electricity bills to information on bus timetables.

By staying connected and being reachable, examples of how mobile phones empower households and individuals can be found from other parts of the world also (UNCTAD, 2008; Wicander, 2009, p.44). In Senegal mobile phones are used as tools for social mobilisation (Debar et al., 2010) and in Tanzania to give voice to marginalised populations (Fuglesang, 2010). There are also numerous studies of how communication on mobile phones can also be used to empower women (see, for example, Dravid & Klimes, 2012, and Pundir & Kanwar, 2012).

mLearning

The first cell phone novel was written and published in Japan by a young writer known as Yoshi. Yoshi pushed out chapters of his novel through Multimedia Messaging Services (MMS) targeting mostly high school students who formed the majority of his readers. The trend has since been popularised in other countries such as the USA, and it is thought that it has changed the literary landscape as well as the shape and form of what writing and reading will look like in the future. With regards to education this is seen as a way of encouraging and attracting students to read more, and express themselves more through mobile writing (www.textnovel.com/keitai, retrieved 12 May 2012).

In certain townships in South Africa twice as many school kids have mobile phones compared to computers making it a good tool for education applications (Gunzo & Dalvit, 2012). Because of its portability, simplicity and affordability the mobile phone is used in education (Donner 2008). Communication on mobile phones could provide affordable access to education in remote areas, and for nomadic and displaced communities. Mobile phones could enhance and supplement in-class learning by recording lectures and podcast lectures, synching with a television or using the mobile as a calculator (Wicander, 2009, p.47). The mobile phone also has the potential to amplify and enable local modes of content and knowledge transmission (ibid.), as well as being able to support educational administration (Traxler, 2006).

In regions where most of the teachers have mobiles phones, communication by mobile could be used to contact and stay in touch with parents and students regarding test schedules, exams, enrolment criteria, fees, admission dates, holidays, cancellation of classes, to distribute information about seminars and meetings et cetera (Wicander, 2009, p.47). Other examples of mLearning are how to use the mobile phone for edutainment such as quizzes to educate on HIV and Tuberculosis (see Khanna et al., 2012).

Literacy remains a big problem in the world with one fifth, or one billion, not being able to read or write. Even in this area the mobile phone could be used (see Debar et al., 2010, for a study in Senegal). But it remains important mobile phones and applications to be designed for non-literate communities (White, 2010). Studies have, for example, shown that farmers in Kenya prefer voice over text not least because of issues of literacy (Crandall, 2012). And here voice-based applications and re-narration innovations are of importance (Dinesh & Uskudarli, 2012).

Challenges and Future Possibilities

These examples show, the possibilities and usages of communication on mobile phones for development purposes. However, from an academic perspective, Duncombe (2010) has called for a greater conceptual and methodological rigour in the conduct of research as well as theoretical and methodological development of the field. The field is young and still suffers from techno-determinism. As Richard Heeks outlined in his keynote address already in 2008, "we are too ready to jump onto the merry-go-round of novelty", implying that we are so fascinated by new technology, amazed by what can be done with it, that we forget to scrutinise it critically and oversee contextual factors for adoption and use.

There is a need for critical perspectives as well as contributions from more sociologically oriented researchers. Poveda & Svensson (2012), drawing on theories from media and sociology, contribute with a critical perspective on the increase of mobile communication in developing countries. Their argument is that mobile telephony not only brings with it new and increasing opportunities for development, but also gives commercial companies cheap and direct access to communities which previously had been either left out or considered beyond reach. Also Lyytinen (2010) has underlined that the role of the private sector in ICT for development as well as M4D remains understudied.

Drawing on gender and technology studies, Wamala (2010) illustrates the social inequalities pervading mobile phone access and use in Uganda. Using gender as a point of analysis, access in all its variance continues to favour men/boys. Women's social economic control is still in the hands of men and use of a mobile phone requires financial injections that many women do not have access to. In response to this, communication practices are constantly being re-negotiated, many of which are packed with gender hierarchies that make visible the sociological orders in society (Wamala, 2012). In rural areas, where infrastructural challenges require innovative access strategies such as climbing hills, at times even trees, to acquire the elusive signal, these practices are contained within the male norm as acceptable behaviour for this group, but unacceptable for women. As such women may own mobile phones but their access is limited to mobile handset possession.

Even within these constraints the mobile phone continues to empower many women across Africa. Take mGovernance as a case in point; through this technology, women who have previously been barred from taking part in governance processes can now contribute to various debates from the comfort of their homes. Where, in the past, women have been unable to travel to public meetings, or take part in public rallies they are now speaking through the mobile phone and actively engaging in political processes (Wamala, 2011).

Communication on mobiles phones is transforming our societies in a much more profound way than just opening up opportunities for development. It transforms our understanding of identity, discourse, community, technology, knowledge, space and time just to mention a few (Traxler, 2008, p.95). Therefore, we return to the more sociological questions on what the rise in communication on mobile phones mean for its users, society and culture at large, questions that we need to address to fully understand the impact of mobile phones and possible areas of use. A study in Tanzania, for example, showed that mobile phones are not primarily used for economic and business purposes but for maintaining relationships (Mpogole et al., 2008). Hence, the mobile phone is not just a tool for development but a

ubiquitous technology in which our everyday life and relations are negotiated and made relevant.

The field of M4D has to keep up with perpetual technological developments. The last few years have marshalled in smart phones, which have created numerous opportunities. For example, the majority of Uganda's 4.5 million internet users access their internet services through mobile phones (CIPESA, 2012). This has increased internet penetration in Uganda and precipitated an increase in the use of social media tools for most of the areas we have covered in this paper. Development efforts (including techies, NGOs, government and academics) are turning to the mobile phone as a powerful tool for development, and local mobile applications that address everyday services and information needs are fast becoming ubiquitous. Smart phones are, however, limited to the urban elite, and the average rural Ugandan has access to a basic mobile phone that does not support half of the features the smart phone promises. East Africans recognise this discrepancy and there is growing reference to an mDivide (smart phones/basic phones) that should be addressed.

The Nordic region has harnessed ICT and mobile applications across many domains and the same is true for Southern African countries. There have been plenty of mobile applications ranging from agriculture and micro-finance to the health and governance, to serve these communities. We have presented here an overview and examples of how to use communication on mobile phones for development purposes from many different countries. And we hope that we have made it clear that both developed and developing regions can learn from each other. This is the reason for presenting M4D as a future research priority for Nordic and Southern African universities.

In conclusion, with the proliferation of mobile phones in developing regions, we know that research on M4D is important. But we also know that a rapid growth in the number of subscriptions does not imply development per se (Mpogole et al.; Mtenzi et al., 2008). Hence we are still struggling on how to do M4D research correctly, in a field that is still biased towards techno-determinism, lacking critical perspectives and not sufficiently taking contextual barriers into account. We hope to be able to address such issues in a SANORD context.

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