Final evaluation of the Institutional University Cooperation with the University of Limpopo, South Africa

vliruos
SHARING MINDS, CHANGING LIVES

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ACRONYMS

ARC	Agricultural Research Council
D4D	Digital for Development
DAC	Development Assistance Committee
DGD	Directorate General of Development Cooperation and Humanitarian Aid
DSS	Demographic Surveillance System
DST	Department of Science and Technology
FGD	Focus Group Discussion
GIS	Geographic Information System
HEI	Higher Education Institute
HoD	Head of Department
HRD	Human Resource Development
ICOS	Institutional Coordinator for Development Cooperation
ICT	Information Communication Technology
IR	Intermediate Result
IUC	Institutional University Cooperation
KRA	Key Result Area
KRI	Key Results Indicator
KUL	Katholieke Universiteit Leuven (Catholic University Leuven)
JSC	Joint Steering Committee
LSC	Local Steering Committee
N	North
NPO	Not For Profit
MeCRU	Medunsa Clinical Research Unit
MoU	Memorandum of Understanding
MRC	Medical Research Council
MSC	Master in Science
MTE	Mid Term Evaluation
MUA	Memorandum of Understanding and Agreement
NIH	National Institute for Health
NGO	Nongovernmental Organisation
NRF	National Research Foundation

OECD	Organisation for Economic Cooperation and Development
P	Project
PC	Project Coordinator
PhD	Doctor of Philosophy
PL	Project Leader
PP	Partner Programme
PSU	Programme Support Unit
RCT	Randomized Controlled Trial
S	South
SARCHI	South African Research Chairs Initiative
SAERA	South African Education Research Association
SAPRIN	South African Medical Research Council
SDG	Sustainable Development Goal
SMU	Sefako Makgato Health Sciences University
STD	Sexually Transmitted Diseases
STI	Science, Technology and Innovation
TB	Tuberculosis
TIA	Technical Innovation Agency
ToR	Terms of Reference
UA	University of Antwerp
UCT	University of Cape Town
UG	University of Ghent
UKZN	University of KwaZulu-Natal
VP	Vice-President
VLIR-UOS	Vlaamse Interuniversitaire Raad – Universitaire Ontwikkelingssamenwerking
VUB	Vrije Universiteit Brussel
WHC	Wits Health Consortium
WRC	Water Research Commission

PREFACE

This report highlights the results of the Institutional University Cooperation (IUC) at the University of Limpopo (UL) as it has ended its execution. The evaluation team hopes the conclusions and recommendations will contribute to the reflection on the impact of the IUC on the institutional functioning of UL and on its developmental impact, and sustainability of interventions. [1]

The evaluators feel privileged to have met very committed and enthusiast academic and other staff of Flemish partner universities and of the University of Limpopo. The evaluators have enjoyed (online) interaction with UL staff and thank them for the open exchange of perceptions and experiences.

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[1] The information and views set out in this evaluation report are those of the author(s), independent evaluators, and do not necessarily reflect the opinion of VLIR-UOS or the universities/university colleges involved.

EXECUTIVE SUMMARY

Context and objectives of the evaluation

The University of Limpopo was the result of a merger between the former Medical University of Southern Africa based in Pretoria and the University of the North based in Polokwane, which occurred on 1 January 2005. In 2015 the MEDUNSA campus split and became the Sefako Makgatho Health Sciences University. The IUC programme, "Human Wellness in the context of Global Change - finding solutions for rural Africa", seeks to strengthen the capacity of staff and students in research and community engagement through a suite of integrated, multidisciplinary research projects, ultimately aimed at rural community beneficiation. This cuts across six different research projects which reaches out both the Turfloop campus at the University of Limpopo (UL) and the Medunsa Campuses at the Sefako Makgato Health Sciences University (SMU).

The programme with UL includes 6 projects of which one project is transversal to strengthen UL in the field of statistics, GIS, remote sensing and modelling. Four other projects are developed around prevention and management of chronic diseases (project 2), capacity development in language literacy (project 3), sexually transmitted diseases (project 4), impact of water-related stressors on the ecosystem (project 5) and (project 6) food security.

As mentioned in the Terms of Reference, South Africa is still a new democracy which is finding its footing in various areas. The political injustice which was prevalent in the previous dispensation left deep seated anomalies which affected and are still affecting the social, education and economic tissue of this country. To contribute to national priorities aimed at increasing livelihood and employment, strengthening the quality of education and poverty reduction, the University of Limpopo, together with VLIR-UOS and its Northern partners, developed and implemented a 10- year Institutional University Cooperation (IUC) programme, which started in 2010 and came to an end in 2019. The VLIR-UOS programme was developed with one main objective: "Human Wellness in the context of Global Change - finding solutions for rural Africa" reflecting UL's Motto: *"The University of Limpopo for human and environmental wellness in a rural context – finding solutions for Africa".* With **human and environmental wellness at the core of the programme,** the different specific projects are in line with the (inter)national priorities and those of the VLIR-UOS country strategy.

This final evaluation was initially foreseen to take place right after the end of the programme March 2020), but since this period felt right in the first Covid-19 lockdown, the evaluation was moved towards the end of the 2020, early 2021. **The evaluation objectives of the evaluation were multiple**: (i) learning - what worked well, what didn't and why? (ii) steering - supporting decision making processes (for future programmes and related embedment of achieved results) and (iii) accountability by independently assessing the performance of the IUC programme.

Next to the evaluation questions related to the 5 OECD Development Assistance Committee (DAC) criteria (scientific quality, relevance, efficiency, effectiveness, impact, and sustainability), with specific attention to sustainability and effectiveness, the ToR specified three questions: two on sustainability and one on the role of the UL Trust in validating all IUC costs made in UL

Evaluation methodology

The evaluation was executed by an **evaluation team of three persons**: one international evaluator and two evaluators from South Africa (one national evaluator and a second evaluator in a mainly supportive role to the national evaluator (taking notes)). Due to the pandemic Covid-19, the evaluation visit to the University of Limpopo was coordinated from a distance by the international evaluator. The evaluation followed **three phases**: **an inception phase, a phase of data-collection and a phase of analysis and reporting**. An **evaluation framework** was developed, composed of evaluation questions related to the OECD DAC evaluation criteria. Impact as such was measured as part of overall effectiveness at project and programme level. The evaluation questions consisted of different judgement criteria and guiding questions or points of attention. For each of the judgement criteria an **appreciation scale** was developed as requested in the ToR to assess performance of the programme, at project and programme level. A four-point qualitative scale was used, from poor (1) to excellent (4) performance. This scale did not intend to cover all indicators/guiding questions but was above all helpful in formulating a balanced judgement in a transparent manner. The scores were not intended to compare the projects amongst each other but the overview of scores helped to reflect upon the overall judgement for this IUC.

The main methods used in this evaluation were a **desktop study** and semi-structured **interviews** (either individual or in small groups): this was done online and face-to-face in Belgium (with project leaders and programme coordination and management) and in South Africa (several interviews), followed by an **on-site visit** to UL and SMU and to (a selection of) local external stakeholders. Briefing and debriefing sessions were envisaged as opportunities to discuss findings and to learn from them.

Main findings and conclusions

Programme level						
EQ1: effectiveness						
The relevance of the programme	4					
Progress in achieving its overall objectives (academic and institutional objectives)	3					
Potential to contribute to impact (development objectives)	3					
Overall (financial) management	3					
EQ2: sustainability						
Institutional sustainability	3					
Financial sustainability	3					
Synergy and complementarity	3					
Clear leadership and ownership	3					
Project Level	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Relevance						
The objectives of the projects are consistent with needs of different stakeholders	4	4	4	4	4	4
Synergy between IUC projects (internal synergy)	3	3	2	4	3	3
The project is coherent	3	3	2	4	2	3
Effectiveness						
Institutional strengthening	3	3	3	3	3	3
Contribution to the national development objectives	3	4	3	4	2	3
Scientific quality	3	3	3	3	3	4
Efficiency						
Delivery of results	3	3	3	3	3	3
Input-output management	3	3	3	3	3	3
Efficiency of project management	3	3	2	3	4	3
Sustainability						

Academic and Institutional sustainability	3	3	2	3	3	4
Financial sustainability	3	3	2	3	3	3
Potential to contribute to impact						
Institutional strengthening	3	3	3	3	3	3
Developmental objectives	3	4	3	3	2	3

In summary, with most of the scores varying between 'good' and 'excellent', the assessment of the IUC programme at UL shows good results, with some exceptions in several areas regarding project 3 (relevance and sustainability) and project 5 (mainly related to the use of the research results). The overall programme and projects are **highly relevant** (with exception project 2 on some specific points) and **have achieved the** institutional/academic and development objectives. Examples illustrate effects of the application of research results at the level of local communities and other stakeholders in several projects, although it was difficult to assess how widespread research results have been integrated and used yet, at institutional level and beyond at the level of the external stakeholders.

The findings revealed that initiatives have been and are being undertaken to ensure institutional and financial sustainability of the programme. Most of the projects (with exception of project 2) were said to have ensured financial sustainability, through the establishment of external partnerships with other universities, private companies, National Foundations and other Institutes etcetera. Several departments, involved in different projects of the now ended programme, are joining forces aimed at attracting external funds.

The fact that **gender mainstreaming received little attention** at project level neither in general at the university did not contribute to gender mainstreaming. This was not achieved during the programme implementation period. Gender was a transversal theme in the programme though.

The **logical framework** served as a planning and monitoring framework but turned out to be less effective as joint learning instrument and in measuring progress in achieving the overall objectives, due to the existence of mainly quantitative indicators and the non-existence of indicators at overall project and programme level. Measuring the indicators at result level has given an indication of achievement of the objectives, but by itself has not proven to be sufficient to assess the level of integration within UL, how widespread research results have been disseminated and to which extent research results have been used by external local stakeholders (and beyond).

The contribution of the **transversal project was highly relevant** during the implementation of the programme. It was said that without this project the same results at the thematic project level would never have been achieved. Project 1 has also contributed to gaining more recognition at national and even international level.

At the project level, **internal and external synergy** have been achieved within and between projects, with results that differ from project to project. External synergies have contributed to innovating partnerships and attraction of funds, while internal collaboration has mainly contributed in a complementary way to the project results. These synergy-strengthening processes require time and patience, as well as the **transformational change process to stimulate and create a research based and learning culture** within UL. As far as this could be verified, these processes seem to have given positive results.

Overall, **projects are managed efficiently. Internal communication** within and between **projects has functioned with different results at project level**. The programme management unit (PSU) has supported the projects in different ways (logistics, monitoring, coordination of programme activities among other) which was highly appreciated, although some frictions have remained throughout the

whole programme regarding some specific aspects of the project budget management (payment of field activities).

Recommendations

The recommendations were grouped according to whom they are directed.

The first group of recommendations relates to the development of future programmes and projects. Within this context, it is suggested to include as early as possible during programme implementation the development of a **retention and succession plan** and not wait until the programme has come to an end. Regarding the IUC programme, succession plans are still not developed for all projects (as far as could be verified). This is important though to embed institutional results in a sustainable way, and to include development of the necessary competencies of these persons that will ensure continuation of the created learning and research culture.

When developing a monitoring framework for a project or programme, indicators at overall objective level in the logical framework should be developed in a more coherent way with the indicators at project level and capture better the desired changes at institutional level and beyond. Next to the existing tools, it could be analysed if **other tools could be used to measure the contribution of the programme to the desired impact** at the end of a project or programme at the level of involved external (local) stakeholders, particularly when these projects or programmes have a long duration such as the IUC programme. In this case, it can be difficult to develop good indicators from the start.

At the level of the University of Limpopo, It is recommended to **include gender as a transversal component in future projects and programmes**, and to revisit the concept of gender main-streaming. This to get more clarity on the concept of gender mainstreaming and secondly to allow the development of a feasible and realistic gender strategy that touches different aspects such as gender integration at the organizational, the student intake and the research level.

It is suggested to continuously **monitor the learning and research culture** within UL, in the light of ensuring sustainability of the created research and learning culture. A dashboard with some critical indicators and a standard level to be achieved could be developed for each relevant indicator, allowing the regular monitoring of the learning and research culture within UL at different levels during the next years and the undertaking of measures if needed.

At the level of UL overall management, it is suggested that the **university management actively supports the promotion and application of policies** that can be derived from the IUC programme, that could attract a broader public within the university and beyond This to attract more users (e.g.in the case of ICT (e-learning), data collection methods etc.) and to facilitate more possibilities for spinoff initiatives and collaboration with other external stakeholders. The development of certain policies should also contribute to the embedment of research results.

For future projects or programmes involving different departments, it is recommended to develop clear **communication guidelines.** This communication is meant to improve overall communication within and between projects when different departments/institutions and/or disciplines are involved. This should allow to ensure regular information sharing and exchange on project updates, independently

on who is in charge and thus individual engagement or motivation. This should ensure that communication and exchange of infor-mation between involved university units can continue in case of turnover or unforeseen changes in staff composition.

The design of future projects and programmes should consider **involvement of external stakeholders from the moment this is relevant**, to avoid little ownership for the research results with limited effects at community and political level as a consequence. Eventual partnering with less conventional actors such as NGOs or grass root organisations could then be considered, which could advocate for using the research results by the appropriate stakeholders, aimed at increasing the potential for impact.

Overall, it is recommended that in future projects or programmes, N-S partnerships could come to fruition in a more **equal way** It is suggested that these aspects are thoroughly discussed and analysed in cooperation with the South and North partners. In future programmes or initiatives, it should also be clear from the start what **kind of engagement is expected by whom at different level and to find ways how this can be monitored**.

In addition to this, it would be recommendable, for future programmes, to reflect how **budgets** could be spent in a more flexible way, allowing more tailor-made spending within the overall programme period of 5 years, and how instruments like the logical framework could be used not only for monitoring progress but also for joint learning in future programmes.

1. Introduction

1.1. Background

1.1.1. What is an IUC?

The ToR for this assignment (in annex 1) clearly describe what an Institutional University Cooperation (IUC) programme is. It is defined as a long-term (12 years) institutional partnership between a university in the South and Flemish universities and university colleges. The programme supports the partner university in its triple function as provider of education, research and extension (also identified as 'societal services'/'outreach'). It aims at empowering the local university to better fulfil its role as a development actor in society.

The objectives and content of an IUC partnership between one partner institution in the South and Flemish universities and university colleges in the North are outlined in a partner programme (technical and financial file). All IUC programmes combine objectives of institutional strengthening and strategic thematic capacity building (linked to both institutional priorities and developmental priorities in a specific country). Each partnership consists of a coherent set of interventions (projects) geared towards the development of the teaching and research capacity of the university, as well as its institutional management.

A **generic Theory of Change for all IUC programmes** is developed, which summarizes the expected output, outcome and impact of the supported change processes and which highlights the importance of the partnership and collaboration between the educational institutions concerned and the interaction between sub-projects. Output refers to deliverables related to education improvement, research deliverables, strengthened research or education capacities, improved infrastructure and equipment, and deliverables related to extension (level of efficiency). These outputs are assumed to contribute to outcomes related to improved research practices, improved education practices and new knowledge, applications or services that are also taken up by relevant stakeholders (level of effectiveness). In the long term, the IUC partner programme aims at contributing to development changes.

IUC programmes are managed by local steering committees and a joint North-South steering committee in which VLIR-UOS is also participating. North and South coordinator are managing the programme with the support of a programme manager in the South, and an administrative support, both in North and South. Each project is managed by two project team leaders (North and South) who are taking part in the steering committees.

1.1.2. The IUC with UL

The University of Limpopo was the result of a merger between the former Medical University of Southern Africa based in Pretoria and the University of the North based in Polokwane, which occurred on 1 January 2005. In 2015 the MEDUNSA campus split and became the Sefako Makgatho Health Sciences University.

The IUC programme, “Human Wellness in the context of Global Change - finding solutions for rural Africa”, seeks to strengthen the capacity of staff and students in research and community engagement through a suite of integrated, multidisciplinary research projects, ultimately aimed at rural community beneficiation. This cuts across six different research projects which reaches out both the Turfloop campus at the University of Limpopo (UL) and the Medunsa Campuses at the Sefako Makgato Health Sciences University (SMU).

The programme with UL includes 6 projects (see next Table 1), of which one project is transversal to strengthen UL in the field of statistics, GIS, remote sensing and modelling. 4 other projects are developed around prevention and management of chronic diseases (project 2), capacity development in language literacy (project 3), sexually transmitted diseases (project 4), impact of water-related stressors on the ecosystem (project 5) and (project 6) food security.

Overview of projects in the IUC-UL (phase II)	Involved Dept./Institutes UL	Involved Flemish and other HEI
Project 1: Data Management, Statistical Analysis and GIS During Phase II, Project 1 aimed at continuing with the focus area established during Phase I with additional emphasis on simulation modelling to improve climate change adaptation research for staff and students at UL who are engaged in this area. Also, in Phase II, the Statistical component of the project was meant to be enhanced and strengthened.	University of Limpopo, Department of Agriculture Department of Statistics Geography & Environmental Studies ICT department	University of Hasselt (project leader North) University of Gent University of Antwerp
Project 2: Living with Uncertainty: Analyzing Rural Livelihoods and Rethinking Sustainability in South Ethiopian Rift Valley This project in phase II is a result of a merger between what in Phase I was Project 2 (Energising competent communities in the context of wellness and global change) and Project 4 (Prevention, control and management of chronic diseases in a rural community). Based on the work that was done during Phase I, it became evident that there was an urgent need to develop and introduce an intervention programme for prevention, control and management of chronic diseases in this rural community, including non-communicable and communicable chronic diseases such as HIV/TB. In addition to undertaking such community-based health promotion and health prevention programs, there was also a need to strengthen the primary health system in such a rural area in order to provide adequate services for prevention and management of chronic diseases.	University of Limpopo, Department of Medical Sciences Faculty of Management Sciences and Law. Rural Development and Innova-tion Hub Turfloop Graduate School of Leadership (TGSL) Department of Health Department of Social Work Department of Psychology Department of Geography Dikgale Health and Demographic Surveillance System (HDSS) site	University of Antwerp (project leader North) University of Ghent University of Leuven
Project 3: Multiple Literacies The project aims at increasing the ability to teach language skills (reading) using evidence-based solutions and the capacity to teach health competences (food and water pollution) through	University of Limpopo English Studies Department Centre for Science Education	University of Ghent (project leader, North) University of Antwerp

Overview of projects in the IUC-UL (phase II)	Involved Dept./Institutes UL	Involved Flemish and other HEI
evidence-based e-learning solutions. Secondly, the project wants to increase the capacity to teach health competences (food and water pollution) through evidence-based e-learning solutions. At developmental level, the project wans to improve the involvement of the community in dealing with reading literacy and health issues through e-learning solutions.		
Project 4: Laboratory science and public health management of sexually transmitted infections The focus is made on the area of sexually transmitted diseases. In phase 1, there was a fcous on (among other things) human papillomavirus (HPV) infection as a cause for cancer. As this part was quite successful and in line with the health strategies of South Africa, in the second phase it was decided to emphasize both the public health research as well as the research on infectious diseases on sexually transmitted diseases (STD). To narrow the field further, the project specifically wanted to look at STDs in subgroups of the population (adolescents and MSM[2]), specific areas of the body (cervix and oral) and to narrow the scope of infectious agents to HPV, Chlamydia trachomatis (CT), Neisseria gonorrhoeae (GC), Bacterial Vaginosis (BV), Mycoplasma, Uraeplama.	When starting phase II: Dept. microbiology Dept.Molecular biology (HPV) Dept. MRC Dept. Anatomical Pathology Dept. Obstetrics and Gynaecology	University of Antwerp (project leader, North) University of Ghent
Project 5: Assessing the impact of land-use on functions of the Limpopo and Olifants river systems During phase 1 the project concentrated on the aquatic stressors in the Olifants River, Limpopo province. For phase 2 it was planned to extend the project to the Limpopo River System in the province and include land-use. Aims of the project are (i) Monitoring of the impact of land-use on water quality and variability (climate chance) on human health and the aquatic ecosystem in general, (ii) The assessment of water and sediment quality, fish and their parasite and other aquatic biota (bio-indicators of water quality) and the impact thereof on the ecosystem and human health; (iii) enhanced departmental research capacity through increased postgraduate output, publications and staff development, and (iv) establishment of sustainable water research and training programmes/capacity at UL.	University of Limpopo Department of Biodiversity. Expertise: water pollution Expertise: Fish parasites and fish health Expertise: Water pollution and aquatic macro-invertebrates Expertise: water pollution Department of Water and Sanitation. Microbiology – freshwater microbes	University of Antwerp (project leader, North) Catholic University of Leuven (KUL)

[2] Men who have sex with men

Overview of projects in the IUC-UL (phase II)	Involved Dept./Institutes UL	Involved Flemish and other HEI
Project 6: Food security The project takes into consideration the potential impacts of a changed global climate and the position that the University of Limpopo should play in ensuring food security in the predicted climate. Consideration is given to the level of development of the relevant modern research approaches in addressing the identified needs. The project is a continuation of the project on Food Security (Phase 1) with regards to indigenous chicken and crop development and improvement, and biotechnologies.	University of Limpopo Faculty of Science & Agriculture Expertise: animal nutrition, nematology and agriculture, animal breeding, agricultural economics, molecular biotechnology, soil science ARC specialist (agronomy)	Vrije Universiteit Brussel (VUB) (project leader, North) Ghent University Catholic University of Leuven (KU Leuven)

Table 1: Overview of the 6 projects, involved in the IUC UL (Source: IUC-PP, phase II)

1.1.3. Terms of Reference of the Evaluation

The Terms of Reference (ToR) formulated following evaluation purposes: (i) **learning** - what worked well, what didn't and why? (ii) **steering** - supporting decision making processes and (iii) **accountability** by independently assessing the performance of the IUC programme.

Next to the evaluation questions related to the 5 OECD Development Assistance Committee (DAC) criteria (scientific quality, relevance, efficiency, effectiveness, impact, and sustainability), with specific attention to sustainability and effectiveness, the ToR specified following evaluation questions which were taken up in the report:

- What has been the role of the UL Trust in validating all costs made in UL (and possible evolutions throughout the implementation time?[3]
- Sustainability: To what extent has the IUC programme contributed to increased external funding with other donor programmes contributing to the IUC programme's sustainability? To what extent is this external funding/ cooperation with and funding from DST, NRF and MRC complementary with the IUC programme?[4]
- Sustainability: the IUC programme has been an important stimulus for cooperation between UL and SMU. To what extent will this cooperation continue between UL and SMU (and other South African universities)?[5]

The evaluation had to consider the effects of the Covid-19 pandemic. The consultant was invited to share a document highlighting how the effects of pandemic would be managed in terms of the organisation of the evaluation mission and in defining the evaluation questions.

[3] Response included in chapter 2.2., efficiency
[4] Response taken up in the chapter 2.2, sustainability and in the respective project assessment reports
[5] Response included in the overall programme chapter 2.2. under sustainability

1.2. Context

As mentioned in the Terms of Reference, South Africa is still a new democracy which is finding its footing in various areas. The political injustice which was prevalent in the previous dispensation left deep seated anomalies which affected and are still affecting the social, education and economic tissue of this country. It is therefore imperative for the ruling government to come up with pieces of legislation which will create an environment which will address these anomalies. That is why the Department of Higher Education and Training is in full force changing and introducing new approaches that would address the anomalies. It therefore places emphasis among others on the following:

- The availability of government funding for students who cannot pay fees for themselves.
- Allowing learning institutions to all students regardless of race, economic status etc.
- Changing curricula to suit the challenges as faced by the country.
- Funding infrastructure development in all previously disadvantaged universities.
- Funding research in all institutions.

Socially, the country has a high rate of school drop-out, HIV and Aids pandemic, unemployment etc. All these factors have an impact on the economy in that government has to carry a burden of supporting its citizens where they cannot be able to. Social grants, medication and paying incentives to employers of youth. The major problem faced by the country is the rate of unemployment which seats at 3.4 million youths. Although the government has made progress in addressing several issues that are contributing to reducing unemployment, there is an acknowledgement from the government that much still needs to be done. Limpopo University faces the challenge of relatively low academic staff with PhD degree. Postgraduate PhD enrolment and graduation is low, constituting less than 2% of the total student enrolment.

The Minister of Education has started revamping the then Further Education and Training Colleges (FET's) to be called Technical and Vocational Education and Training Colleges (TVET). The training institutions will then train according to the need of skill in the mainstream economy. The number of PhD's in these institutions should also be increased and ensure that their teaching capability and their productivity in research and innovation. Next to this, the Minister of Education has been initiating and encouraging several initiatives aimed at building capacities in Higher Education Institutes.

It is recognized that the Turfloop Campus, because of its rural setting, struggles to attract and retain a younger generation of academic staff members. With the implementation of the VLIR-UOS-IUC programme, the turnover of staff members could be curtailed, resulting from the following (non-exhaustive list) planned activities that are applicable globally and in South Africa: competitive remuneration and more generous service benefits, additional training and development opportunities, more flexible working arrangements and other incentives.

To contribute to the existing educational challenges in higher education and at the same time to the societal challenges faced by the people in the province of Limpopo, the VLIR-UOS programme was developed, with one main objective: *"Human Wellness in the context of Global Change - finding solutions for rural Africa"* reflecting UL's Motto: "The University of Limpopo for human and environmental wellness in a rural context – finding solutions for Africa".

1.3. Evaluation methodology and process

This evaluation was executed by a team with an evaluator from Belgium (Mrs.Nancy Jaspers, on behalf of ACE Europe) and one national evaluator from South Africa (Mrs. Qureisha Nagdee (independent consultant). The national evaluator was supported by a local assistant (Mrs. Bonisiwe Mabaso) during the field visit to UL. In the following, the report highlights the evaluation framework used by the evaluators, the activities undertaken, the limitations of this evaluation and quality assurance.

Evaluation framework - The evaluation was implemented in three phases: an inception phase, a phase of data-collection and a phase of analysis and reporting. During the inception phase an evaluation framework (see annex 2) was developed, composed of evaluation questions related to 4 of the five OECD DAC evaluation criteria (impact as such was not measured but progress towards impact was assessed as part of overall effectiveness) at project and programme level.

The evaluation questions were elaborated based on the evaluation questions formulated in the ToR and the assessment criteria used in the self-assessment reports. The evaluation questions consist of different judgement criteria and guiding questions or points of attention. These points of attention clarified what information would be looked for and as such guided the data collection and development of interviews. Under these points of attention, the effects of the Covid-pandemic were considered (effects on execution, on relevance, on effectiveness).

For each of the judgement criteria an appreciation scale was developed as requested in the ToR. A four-point qualitative scale was used.

Judgement scale
4 Excellent/very good performance
3 Sufficient/Good performance
2 Insufficient/performing with problems
1 (very) Poor /major difficulties

This scale is not intended to cover all indicators/guiding questions (as some of them are more important or relevant in the final judgement than others, depending on the project content) but was above all helpful in formulating a balanced judgement in a transparent manner. **The scores are not intended to compare the projects amongst each other, the overview of scores simply helps to reflect upon the overall judgement for this IUC.** The evaluation questions as well as the judgement criteria and guiding questions are part of the evaluation framework and an integral part of the inception report, developed prior to the evaluation visit to UL.

The main methods used in this evaluation were a **desktop study** and semi-structured **interviews** (either individual or in small groups): this was done **online** in Belgium (project leaders and programme coordination and management) and in South Africa (several interviews), followed by an **on-site visit** to UL and SMU and to (a selection of) local external stakeholders. Briefing and debriefing sessions were envisaged as opportunities to discuss findings and to learn from them.

The evaluators made optimal use of existing documentation and in particularly of the self-assessment reports. The self-assessment reports were studied and analysed before effective data collection through interviews took place.

Semi-structured interviews were conducted with a variety of internal and external stakeholders. In case the respondents were more than three, the evaluators choose to have a focus group discussion on specific topics proposed by the evaluator. Respondents were in all cases invited to add issues, the evaluators did not ask for but were felt important to them. Key respondents included the IUC coordinators and team leaders, IUC programme manager and ICOS, university leadership, representatives of the academic staff involved in each of the projects and not involved academic staff, post-graduate students involved in the projects, and several external stakeholders (see annex 3 for a complete overview of interviewees).

An online debriefing session was organised before finalizing the draft report: coordinators and team leaders participated in a joint discussion of findings based on written project assessments and a presentation of the overall analysis at programme level.

Limitations of the evaluation – In general, the MTE was very well organised by the IUC South coordinator and the programme manager. Due to the Covid-19 pandemic, the international consultant was not able to participate in the field visit. Next to the exploratory interviews with the programme coordination and programme management prior to the inception note, she conducted the online interviews with the overall programme coordinator and North project leaders. The online meetings went well (technically).

Quality assurance – ACE Europe developed a Covid-19 proof approach for its evaluations and shared this with colleagues and with the IUC stakeholders. The combination of different sources (more in particular: interviews, focus group discussions, self-assessments, programme documents, and outcome harvesting) allowed for sufficient triangulation of information.

1.4. Structure of the evaluation report

Next chapter 2 gives an overview of main findings at programme level, followed by the findings at project level. Based on the findings, main conclusions and recommendations were developed in chapter 3.

2. Overall evaluation findings

2.1. General overview

The general overview below (Table 2) is the summary of scores given at project and programme level, based on the evaluation findings and triangulated against different sources of information.

The evaluation questions consist of different judgement criteria and guiding questions or indicators. These indicators and guiding questions indicate what information was looked for and as such guided the data-collection and development of interview guidelines. As explained earlier above, for each of the judgement criteria (unless specified otherwise), a four-point qualitative scale was used. This scale was helpful in formulating a balanced judgement in a transparent manner.

Judgement scale
4 Excellent/very good performance
3 Sufficient/Good performance
2 Insufficient/performing with problems
1 (very) Poor /major difficulties

Programme level						
EQ1: effectiveness						
The relevance of the programme	4					
Progress in achieving its overall objectives (academic and institutional objectives)	3					
Potential to contribute to impact (development objectives)	3					
Overall (financial) management	3					
EQ2: sustainability						
Institutional sustainability	3					
Financial sustainability	3					
Synergy and complementarity	3					
Clear leadership and ownership	3					
Project Level	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Relevance						
The objectives of the projects are consistent with needs of different stakeholders	4	4	4	4	4	4
Synergy between IUC projects (internal synergy)	3	3	2	4	3	3
The project is coherent	3	3	2	4	2	3
Effectiveness						
Institutional strengthening	3	3	3	3	3	3
Contribution to the national development objectives	3	4	3	4	2	3
Scientific quality	3	3	3	3	3	4
Efficiency						
Delivery of results	3	3	3	3	3	3
Input-output management	3	3	3	3	3	3
Efficiency of project management	3	3	3	3	4	3

Sustainability						
Academic and Institutional sustainability	3	3	2	3	3	4
Financial sustainability	3	3	2	3	3	3
Potential to contribute to impact						
Institutional strengthening	3	3	3	3	3	3
Developmental objectives	3	4	3	3	2	3

Table 2. Summary assessment scores given at project and programme level

In summary (see further under 2.2. and 2.3. for more details and examples), with scores varying mainly between 'good' and 'excellent', with exception of some lower scores for project 2 and 5, the assessment of the IUC programme at Limpopo University shows a good **performance.** The overall programme and individual projects are **highly relevant** and have achieved their results.

The findings revealed that initiatives were undertaken to ensure financial and institutional **sustainability** of the programme. Most of the projects have achieved financial sustainability of their core – previously project – activities.

Points of attention refer to the relatively slow progress made in some of the PhD research projects, the lack of a true gender mainstreaming strategy, the unease in the projects ventilated with respect to the M&E system used, not clearly reflecting the dynamics at project and programme level (e.g. behavioural change, changes in mindset or attitude) and not being able to objectively assess performance at overall project and programme level, because of the non-existence of indicator at these levels.

At the project level, examples illustrate that **internal and external synergy** have been sought and realized, but also that these processes require time. Results also differ from project to project.

Overall, **projects are managed efficiently**. **Internal communication** within and between projects functions well with some exceptions in some projects. The demerger between UL and SMU had a negative effect on the internal cooperation and communication. The programme management unit (PSU) hassupported the projects in different ways (logistics, monitoring, coordination of programme activities among other) which is highly appreciated.

2.2. Evaluation of the programme level

2.2.1. Effectiveness

At programme level, effectiveness of the programme has been assessed against the next judgement criteria:

The relevance of the programme	Excellent (4)
Progress in achieving its overall objectives (academic and institutional objectives)	Good (3)
Potential to contribute to impact (development objectives)	Good (3)
Overall (financial) management	Good (3)

1 The IUC programme proves to be highly relevant

The relevance of the programme	Excellent (4)

Relevance of the IUC programme at UL was assessed in different ways, considering relevance from different angles: an important perspective is the extent to which the **leadership** of the university confirms the relevance of the IUC and its different (project) components. Another angle is the extent to which the programme **responds to the needs of communities and other local stakeholders.** Relevance of the programme also relates to the extent to which it aligns with the **national priorities** of South Africa and to the extent to which the IUC programme **adds value** (in terms of budget, approaches) compared to other interventions at UL (financed by others). Another way to look at relevance relates to the extent to which **gender and environment** are included in the design of the programme. Relevance can also be assessed against the extent to which the programme design allows for **synergy and joint actions** between the involved stakeholders.

The programme responds to the needs of UL and to (inter)national priorities

The overall objectives of the programme[6] are strengthening capacity of staff and students, research and community engagement through a suite of integrated, multi-disciplinary research projects, ultimately aimed at rural community engagement. These objectives contribute to the national strategy aimed at addressing **problems of unemployment and education.**

Interviews with programme coordination, project leadership and institutes within the university confirmed the relevance of the project research thematic areas of phase II **to the university needs**. The main activities of the programme during the second phase entailed building up on the gains from phase I to enhance capacity building of UL staff and students, increasing research outputs and expanding on community engagement activities with the relevant stakeholders. During the evaluation, leadership confirmed that the VLIR-UOS programme focused on **supporting institutional development** of partner universities through inter-university cooperation between Flemish Universities and universities in the South. This was said to be accomplished through building capacity of the local university with local societal needs in mind.

[6] Ref. IUC_PP2_2015-2019

Also, from the interviews with respondents, it became clear that during the formulation of phase II, discussions were held to make sure that the programme would respond to the local people's needs, intending to **improve life conditions of the people in the Limpopo province**. UL leadership confirmed (during the evaluation) the **specific academic and developmental objectives** of the individual projects to be **in line with the overall programme objective of "Global Wellness" which is linked to the UL long term objectives.**

Examples illustrating the relevance of the programme can be found in the project reports (see further below), for instance:

- The video conferencing expert skills acquired from international training and exposure are said to be highly relevant to the university as the ICT department can implement high quality online connectivity for the institution at large, especially during Covid 19. (ref. report project 1);
- Project 2 linked with the national development plan and was highly relevant for its primary purpose to reduce chronic diseases and its effects within rural areas (ref. report project 2);
- Deputy Project leaders confirmed that the VLIR-UOS programme was relevant because it linked with national literacy objectives (ref. report project 3);
- HIV is a major health problem in SA. The lab (project 4) is now one of the sites for HIV Trials Network (ref. report project 4);
- The aim of project 6 was to improve the level of healthy living within the communities surrounding the university, in line with overall National Development Goals as well as with the University's objectives. (ref. report project 6).

Environment

Specific environmental aspects were found in the programme design, particularly in projects 1, 2, 3, 5 and 6. This theme also fits with African initiatives driven by, for example, the Association of African Universities (AAU who in partnership with UNESCO in partnership with the Association of African Universities (AAU) launched an initiative - Mainstreaming Environment and Sustainability in African Universities (Mesa), Southern African Development Community's (SADC) initiatives e.g. Food Security Situation, Food Availability, Regional Trade, Disaster Preparedness, Climate Change (driven by the SADC Secretariat), and The William J. Clinton Foundation's Clinton Climate Initiative (CCI). The evaluation revealed that, for instance, project 5 aligned well with national development objectives of protecting national resources and environment (ref. report project 5), since rainfall and water are very scarce in the region.

Gender mainstreaming

Concerning the **integration of gender** in the programme, the PP II programme document is not very clear on the commitment of the programme with the purpose of gender mainstreaming in the projects and UL.

In the PP II programme document, the **possible areas for synergy** are explained and illustrated, both internal and external. The PP II document includes a schematic overview of the planned internal synergy between projects. For instance, project 1, as crosscutting project, planned to provide services to all other projects. While elaborating PP II, a PhD student in Statistics was already using data from Project 2 (DSS) for his study, and two PhD students from projects 6 and project 1 were employing remote sensing techniques and modelling in their research. During the design phase of programme II, projects 2 and 4, both active in health, planned to share ideas and information generated from this sector. Project 3 proposed to study some aspects of health education and already used some of the

data generated by project 2. The PP II document also describes the possibility of **external synergies**, from the perspective of complementarity between different donors while avoiding duplication of efforts e.g. through improved allocation of resources within sectors, countries and across countries. Based on the above, it can be concluded that the design of phase II allows and plans for synergy. Under sustainability, progress made towards synergy during phase II is described.

Overall added value of the programme, compared to other interventions

The added value of the IUC programme compared to other interventions has been **multiple** and can be summarized as follows:

- Strengthening of research should have a positive effect on education/teaching. (more **research-based education**);
- There is a combined focus on **strengthening institutional capacities and outreach**: The IUC does not limits itself to strengthening academic capacities and infrastructure, but also includes an objective where the link is made between improved research/education and outreach through application of new acquired knowledge;
- The fact that it is a 10-year programme allows for **transformational changes** (e.g. changes in research culture) and not only changes related to improvement of what already exists;
- The funding spread over 10 years versus short term or punctual funding allows for **deepening working relationships and networking** with Belgian counterparts and other external stakeholders;
- This 10-year period should allow for sufficient time to develop sustainability strategies of the project and programme results and investments made;
- The programme enhances **different disciplines of which some in a complementary and synergetic way**.

2 During phase II, further progress has been made towards achieving the overall objectives

The evaluation assessed the extent to which progress was made to achieve the overall objectives, by looking at the attainment of the specific objectives at project level and their contributions to the overall objectives (overall effectiveness), and the potential to contribute to impact.

The programme has made progress in achieving its overall objectives (academic and institutional strengthening)	Score 3 (good)
The programme has the potential to contribute to impact (development objectives)	Score 3 (good)

At the programme level, there is one main goal overarching the six projects namely *"Human Wellness in the context of Global Change - finding solutions for rural Africa"*. To achieve this goal, the programme includes 6 overall and specific academic objectives and 6 overall and specific development objectives at the project level. For the overall objectives at the project level, no indicators were developed which made it difficult to assess this level of achievement during the final evaluation.

At the specific objective level, a list of KRA's were identified to monitor institutional strengthening (see further below). These indicators were developed at the level of the intermediate result (IR) level. In addition, other indicators were added under the IR level, to measure progress towards the specific

objectives. During programme implementation, the projects were supposed to use the logical framework and a narrative report to monitor annual progress. In practice, the logical frameworks were not filled out by the projects. Instead, progress per project was elaborated in the annual narrative report, at the IR level and in a narrative way. The logical frameworks could have shown the evolution or yearly progress per project during phase II in one glimpse, which was not possible now.

Since the programme did not manage indicators at the overall programme level, at the overall objective level of the projects and at the specific objective level of project 1-3, the score to the 2 judgement criteria above at programme level was assigned, based on the qualitative performance assessment at project level, indicating the level of progress made towards achieving academic/institutional strengthening and the achievement of the development objectives (contribution to impact).

(i) Progress has been made towards academic and institutional strengthening

At the programme level, progress made in the field of **strengthened research capacities** can be measured by means of following indicators:

- **Research outputs:** International and national journal publications, book publications, conference presentations, publications, abstracts, etc.
- **Student and staff training** (human resource development): Completion of degree and short course training.
- **Education:** Curriculum inputs
- **Training courses offered:** Workshops to UL Community and outreach to communities
- **Manual development** including laboratory and training manuals
- **Resources mobilization** in the form of **spinoff projects (see further under sustainability)**

The six academic objectives at project level were formulated as follows:

Project	Specific objective at project level
The transversal project (1)	Data management, data analysis; GIS and remote sensing; and efficient ICT services are available at UL
Chronic diseases (project 2)	Capacity building of UL Departments involved in prevention, control and management of chronic diseases
Multiple literacies (project 3)	The research capacity of staff members at UL participating in this project is improved. More staff members graduate with PhDs and are better trained to teach and do research on reading, health and sciences literacies . In addition, more postgraduate students are trained, and capacity of staff members to produce good quality peer reviewed publications is improved[7]
Sexually transmitted infections (project 4)	A focused research consortium with both laboratory facilities and public health expertise in STIs in a unique niche in sub-Saharan Africa
River systems (project 5)	The establishment of sustainable water research and training programmes/capacity at UL
Food Security (project 6)	Become an internationally recognized centre for indigenous chicken and crop production, and biotechnology Unit for proteomics research and training

[7] Source: logical framework project 3.

Table 3: Overview academic objectives project 1-6 (source: logical frameworks project level, IUC programme phase II)

Research outputs

During the implementation of the IUC programme, these indicators were annually monitored and integrated in the annual reporting for VLIR-UOS. Most of the **publications by the different IUC projects** have been realized through a conference abstract and journal, followed by extension activities. Publication in a book (chapter) or through educational material did take place but rather occasionally. Articles have been published in both national and international peer reviewed journals. We see a peak of publications in international journals in 2017, supported by the publications of research results of phase I (see fig.1 below).

Comparing the last 2 years of the programme (2018 and 2019), we can see a difference of publication intensity (journals and conference abstracts) between the projects: project 6 has published most with a significant difference compared to the other projects. For instance, in 2018, project 6 published in 17 journals while project 1 has published 13 times in a journal, followed by the other projects. In 2019, Project 6 appeared in 68 conference abstracts, while for project 1 this happened 8 times, followed by the other projects. Seen the different thematic research topics of the projects, the aim is not to compare between the projects (project did not necessarily do better than the other projects because there are more publications), but the **differences in publication intensity between the projects clearly show the variety in dynamics.**

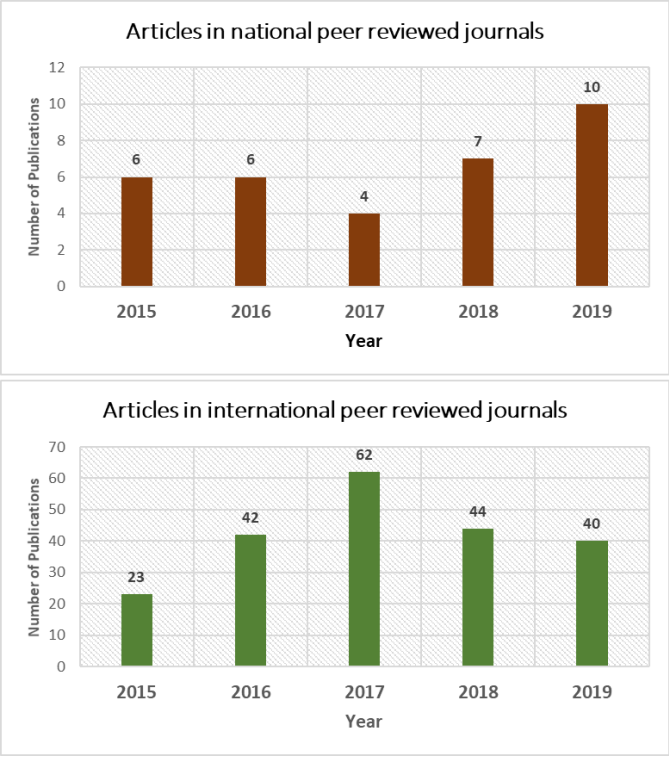


Fig. 1 Number of articles, published in national and international peer reviewed journals- all projects together (Source: UL, final evaluation VLIR-UOS IUC programme, 2021).

In Fig. 2 the evolution of the number of conference abstracts/proceedings during phase II of the programme is illustrated (see next figure). The evolution goes in a positive direction during the last three years of the programme, showing that efforts have been undertaken to share the research results with a broader public.

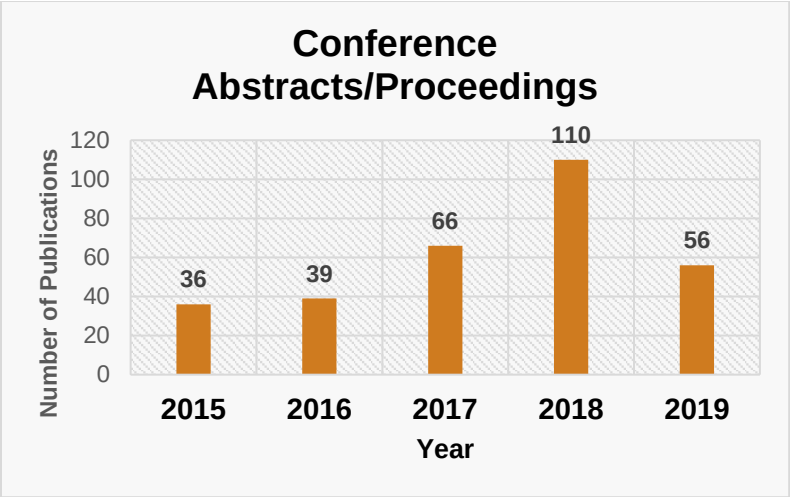


Fig. 2 Number of conference abstracts/proceedings during phase II of the programme. - all projects together (Source: UL, final evaluation VLIR-UOS IUC programme, 2021).

Fig.3 shows best the evolution and progress made by UL in the field of research, between 2004 and 2018. It illustrates that, particularly from 2011 onwards, UL has yearly increased its research publication output. According to UL management and programme coordination and leadership, this is clearly due to the support received from the VLIR-UOS IUC programme.

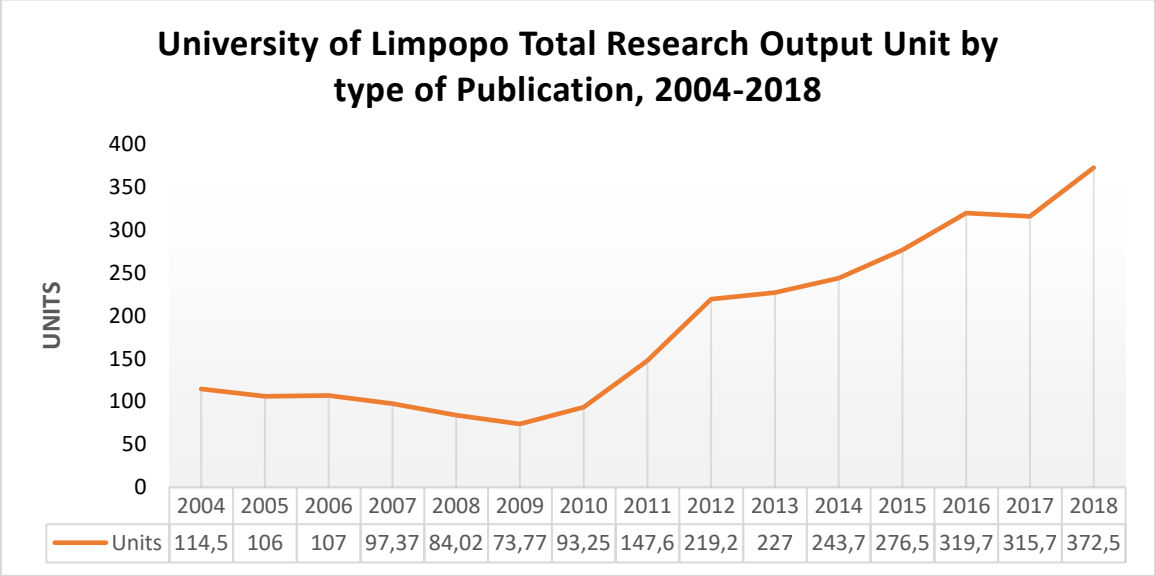


Fig. 3: Increase in research publication output at UL between 2004 and 2018 (Source: UL research output report, 2018).

All projects engaged PhD students. The next figure (fig.4) shows the number of PhD and Master students. The first figure indicates the number of students, directly funded by the VLIR-UOS programme, the second figure shows the number of indirectly funded PhD and Master students. In 2020, most of the directly funded[8] PhD students had been graduated, with still 11 students expected to graduate in 2020.

[8] These are students funded by the VLIR-UOS programme, while indirectly funded students were financially supported by other funds.

Reasons for delay are diverse:

- There is a challenge with the joint registration of the PhD, registrations do not happen at the same time at Antwerp University, causing delays in the process of graduation (P2);
- Covid-19 has been mentioned as a reason why not all PhD students have been graduated so far (although the programme finished in 2019, not all PhD students have finished their studies within the programme period-.
- The expertise/knowledge level of starting PhD students is sometimes relatively low when starting their studies and therefore requires time to come to full speed during their research period.

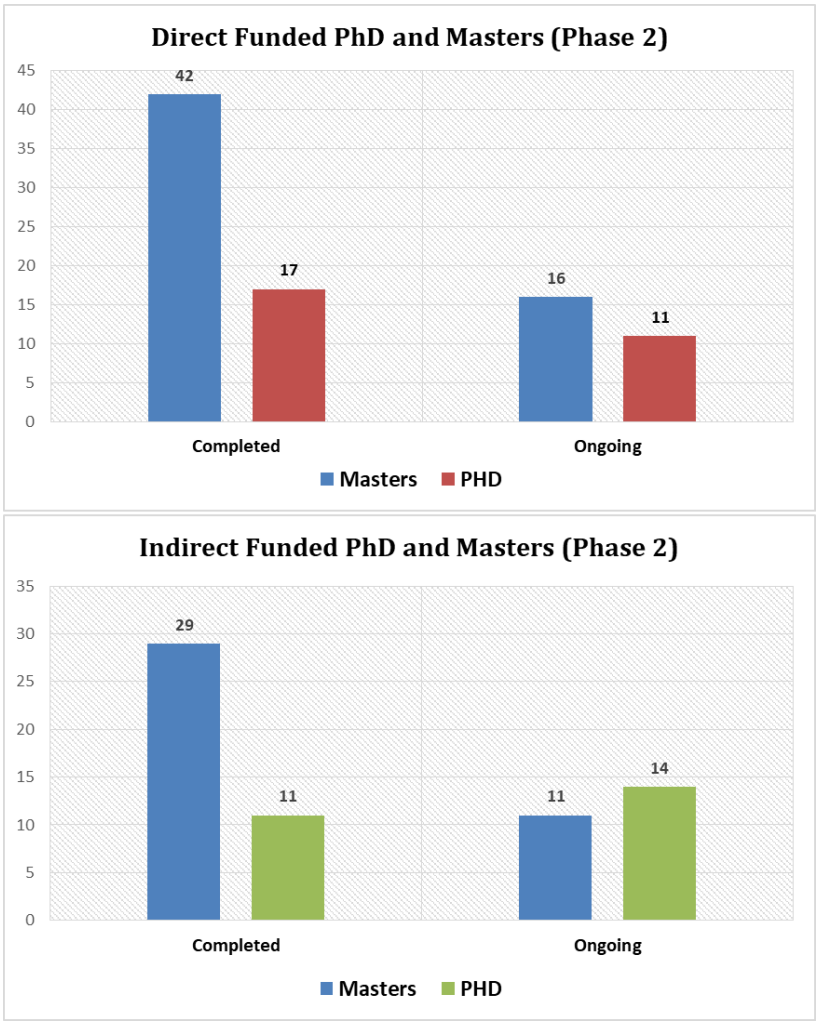
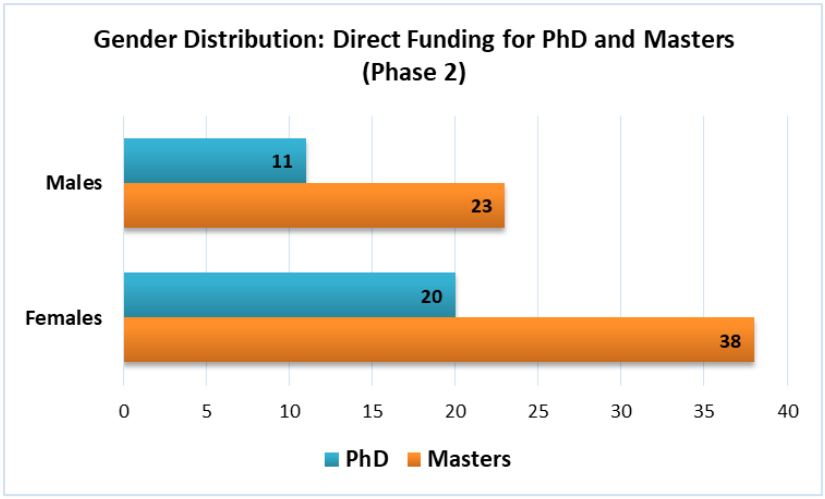


Fig.4: Number of PhD and Master students in the 6 projects, directly and indirectly funded (Source, UL, final evaluation VLIR-UOS IUC programme, 2021).

When we look at the **gender disaggregated information** (fig.5), directly and indirectly supported by the programme, then we find more female than male PhD and Master students, directly funded by the programme in phase II. Regarding the indirectly funded students, we notice more female than male PhD students, and more male than female Master students. In absolute numbers, more female than male PhD and Master students were involved in the projects during phase II.



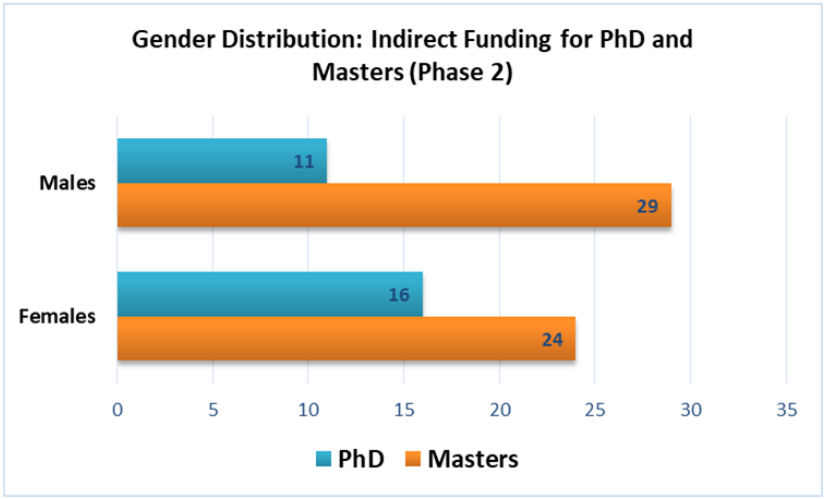


Fig. 6: Gender disaggregated data, PhD and Master students directly and indirectly funded by the VLIR-UOS IUC programme, phase 2 (source, UL, final evaluation VLIR-UOS IUC programme, 2021).

Education and extension

When looking at the last two years of the programme, we see that all projects with the exception of project 2 and 4 have invested in the development of education manuals/packages (all projects one and project 3 four manuel/packages). In addition, all projects have invested in extension and outreach activities to make research results public.

Overall progress made regarding institutional strengthening

The table below illustrates the achieved against the initial targets, expressed by indicators related to research capacity. Although not all targets have been achieved in absolute numbers, we can conclude that the IUC programme phase II has achieved the objective of **increasing its research capacity**.

There are two comments to be made here: firstly, the publication number does not necessarily give an indication of (**improved (research)) quality of the published articles and papers**, since not all national journals necessarily use the same quality standards. We can at least assume that the publications in international peer reviewed journals are of high quality. The quality of articles and papers also depend on the support received from supervisors. In some cases, it was reported (for example in project 2) that some of the students did not receive any response on submissions while in Belgium.

Secondly, the development of educational materials and outreach activities has stayed below expectation, at least in the period under review. Based on the information that could be collected, only (+-) 50% of this target could be achieved. It is not clear what the reasons are for this delay.

Key Result Areas (KRA)	Target (phase II)	Achieved (end 2019)
Publications	270	244
Conference abstracts	334	307
PhD students (directly funded)	32	28
MSC students	30	58
Development of Education/training packages and manuals/training activities	143	75

Table 4: Overview results achieved at programme level – institutional strengthening (source: PP II, annual progress reporting at programme level and information collected during the final evaluation, Feb 2021).

When looking at the project level, the assessment of academic and institutional strengthening resulted in a positive score (score 'good (3)') for all projects. One factor contributing to this is that the IUC programme support allowed for **international exposure and encouraged learning from experiences from other countries** (P2, P3). In project 2, a project beneficiary had an opportunity to go to Uganda and present his work and also wrote a manuscript, two journal articles whilst a PhD student, the VLIR-UOS project paid for the publication of these journals. Project 6 students from UL went onto other international universities, including for a Post Doctorate in the US made possible by VLIR-UOS funding. It was also mentioned that, thanks to the IUC, the **research culture** is now part of UL & considered of high quality.

An important achievement of the programme is that it has **enhanced learning methods and strengthened a learning culture within UL**. Project 3 e.g.mentioned that the project introduced different methods of teaching at school, and that these methods have now become integrated and are still being used. Project 1 has contributed (to project 3) to building ICT capacities on how to use computers, download books, share folders and books on devices and phones. Project 1 has also helped in increasing the internet capacity which has contributed to improve access to information. In project 6, a large number of students have had an opportunity to go and study overseas, they came back to train students and teach them how to do research (based on methods used in Belgium). Some of the employees of the University had only a Master's degree and have been assisted by the VLIR-UOS programme to do their PhD. The university automatically appoints them as Senior Lecturers now (project 6).

The programme has invested in **strengthening research capacities of PhD and Master students.** A contribution of the programme is that the VLIR-UOS programme created strong awareness on PhD's, so much that even the Head of Dermatology is now doing PhD (project 4).

According to respondents, the programme has also contributed to **career opportunities**: several projects mentioned that after graduation, PhD students have become staff members at the university, some have become school principals (P3). A large number of Master and PhD students are now

employed in the Government, employed at other universities and others are with corporate companies (P6). Still in project 6, it was mentioned that the new universities are employing students from the project..One former student is now a lab technician which contributes to the maintenance of the laboratories. Another senior researcher is training Post Graduate students now. In 2012 she benefited from the IUC, her PhD was funded & after graduation, she went to work for the Agricultural Research Council, She has come back to UL to work at the Green Bio Technology center. The fact that she had received international research exposure, helped her a lot (project 6). As for project 1, one project beneficiary graduated with PhD and now works as a Data Manager. Another PhD graduate is a lecturer in the Department of Science and Environmental studies, with much focus on GIS and is also a supervisor to other students. Another PhD graduate of project 1 works as Climate Change scientist and researcher, whilst also supervising students. Several IUC- project members/studens of project one are now involved in water quality research.
Information on employment of alumni is not systematically monitored and stored in a database. In order to better organize follow-up of alumni and to monitor employability of the graduated students, a database should to be created and someone would be needed to update this information periodically. This means that e-mail or contact details of alumni should be kept up to date, and that a survey is sent out period-ically (annually, biannually…) to gauge the further career of alumni. The survey could be linked to the UL newsletter, if this is a communication channel used by the university.

Next to the strengthened research capacities, during the **project assessments examples were collected to illustrate that academic objectives have been achieved**. For instance, in project 1, a GIS training manual has been developed and used by all projects. Training & support in statistics, remote sensing, crop modeling, and GIS were said to have boosted skills & knowledge. The DIMAMO quantitative research driven unit (project 2) can now report on prevalence done, hypertension, diabetes, HIV & other chronic diseases. Master students are continuously encouraged by UL supervisors to do PhD in science literacies funded by VLIR-UOS (project 3). The MSM project is a flagship project done through massive collaborations with other departments, including the School of Medicine, which is now training Postgraduates through the VLIR-UOS programme (project 4). With the aim of achieving the academic SO of project 5, project 5 has been established as a research group, developing youngsters who will be replacing current management in the future. Students are now co-supervising students and have been able to gain good expertise during the programme, to a level of the project developing an agreement contract that the students would not leave the institution for a certain period of time. In addition, research results were included in the curriculum. As for project 6, the international character of the project has been strengthened by students doing their PhD in other countries (e.g. United States). A Centre has been set up in cooperation with the biotechnology and micro-organism departments, funded by UNESCO and with a UL person appointed as chair. Many publications have been realized in high impact, internationally recognized journals. Students having done their study in Belgium have come back and teach other students now how to do research (based on methods learnt in Belgium).

(ii) Progress has been made towards achieving the developmental objectives

The six developmental objectives at project level were formulated as follows:

Project	Specific objective at project level

Transversal project (1)	UL staff and students benefit from training in data management, data analysis, statistics and GIS & remote sensing.
Chronic diseases (project 2)	The management of chronic disease conditions in Dikgale is improved and the burden of chronic conditions in Dikgale DSS is decreased.
Multiple literacies (project 3)	Reading, writing, health and science literaries at both community and schools in Dikgale villages is enhanced. An intervention model is set up to support curricula needs of both teachers and learners on multiple literacies. This will be in line with the Government's Development Plan to combat poor education and health provision in order to eradicate the poverty, poor health and poor education.[9]
Sexually transmitted infections (project 4)	Sustainable research capacity in both public health and laboratory sciences with a link to policy making and industry.
River systems (project 5)	Determination of the impact of water variability, water pollution and contaminated fish on human health and the aquatic ecosystem in general. Increasing water awareness in the community through educators and learners from the local schools.
Food Security (project 6)	Improved knowledge on productive indigenous chicken breeds and indigenous crop varieties and the respective production and marketing methods that contribute to food security is transferred to the stakeholders.

Table 4: Overview academic objectives project 1-6 (source: logical frameworks project level, IUC programme phase II)

The evaluation confirmed progress made by the projects towards the developmental objectives. Project reports mention that the **targets have been met and sometimes beyond expectations, such as project 2, 3 and 4. At the same time, project 5 has not been able to achieve all its development objectives.**

Multiple examples at project level illustrate the achieved results. Some examples/highlights are worth mentioning:

- As for **project 1**, respondents indicate that **many PhD students would not have been able to produce & complete their PhDs without the support of project 1. The programme has supported the project to improve infrastructure, knowledge & skills of team members to be able to provide high quality research & services, by means of ICT, data base management, statistical services, GIS etc. to the other VLIR-UOS projects.** Respondents also mention that UL and surrounding communities (farmers & Government departments) are now able to benefit from this research. For instance, farmers were trained during a science week on climate change and how to mitigate land degradation. Researchers came to farms with their equipment to take soil samples and water for scientific study for the purpose to inform farmers on how best to grow their crops. Findings of research were shared with farmers. At the same time, previous project 1 members believed that more results could have been achieved if government & communities (including corporates) were more aware of UL research capacity on climate change. In this field, more could have been done to promote, engage, raise awareness and make visible the possible services of project 1.

[9] Source: logical framework project 3. In the PP II programme, the objectives of project 3 do not relate to improved literacy and therefore don't match with the project.

- According to respondents, **project 2** was able to reach its developmental goal and beyond in terms of bringing health awareness to community, the nursing/health care staff while also changing people's minds & perceptions. Project 2's objective was to prioritize the health of the community and come up with strategies to intervene. One of the visible IUC- footprints is the DIMAMO (health and demographic surveillance project), the birth child of Project 2. In 2017 the DIMAMO Population Health Research Centre became one of the first SAPRIN[10] nodes. It operates as a health and demographic surveillance system, and was developed to expand and strengthen the previous Dikgale Health and Demographic Surveillance System that has been running at the University of Limpopo since 1995. DIMAMO became Project 2 staff fully acknowledged that rural community health awareness was neglected before, therefore project interventions aimed at bridging the gap through various and effective community-based activities, facilitated by the fact that the university is based in a rural area. **Th elate project report illustrates well that not one specific group is targeted but different groups in different compositions e.g. youth, elderly people, chiefs, individual families, different age groups together,…), which most probably contributes to the success of the project.** The number of people with correct knowledge of chronic diseases, was increased by more than 10% of the targeted population, according to involved project staff. Cholesterol awareness has been included into community awareness initiatives. Traditional council members are now also trained on chronic diseases. Communities have benefitted because of the home gardens programme.and have made aware of chronic diseases, through community engagement activities. The project has also initiated an additional community support element where team members meet up with families of deceased persons and engage them on the causes of death, making the family members understand the cause of deaths in their families, thus preventing undetected health related deaths in the family. These and other initiatives are mentioned in the project 2 report, illustrating the attainment of the developmental objective of this project. 12 Traditional leaders have a *Goshi Forum*, for the improvement of their own communities and link with the Dimamo project. Another example is the creation of a dumping site for waste, thanks to the project. It was said that before the programme, people at Dikgale used to dump their waste everywhere.

- **Project 3** was also able to achieve its developmental objective. Overall, thousands of (e-) books were donated to and reading clubs established in schools. Workshops were set up for educators on how to improve teaching (in physical science for instance). Experiences between teachers from different schools were exchanged. Learner results available are proof that pass rates were improved thanks to improved teaching techniques. The VLIR-UOS programme motivated teachers from Dikwata Primary school to study further and do degrees in teaching. The project made a difference by not only improving access to reading material but by enhancing interaction between teachers and strengthening the variety of teaching methods, since students sometimes only get to experience libraries and labs, lacking exposure to different kind of resources.

- Concerning **project 4**, the developmental objective towards contributing to public health (by reducing sexually transmitted diseases) was well achieved. As mentioned above, the MSM project is a flagship project and success story. Communities highly appreciate the STI awareness activities which have contributed towards reduction of the spread of HIV infections and the project's

[10] SAPRIN, the South African Medical Research Council, is a national network of research centres that monitor the health and socio-economic well-being of whole populations with the aim of improving quality of life. (Source: dst.gov.za)

response to National priorities in this area. Public Health Digitalization through the VLIR-UOS lab allows for communities to come through from the field research activities and have their samples taken and tested from the lab. Clinical trials are conducted in partnership with MeCRU. Joint PhD's have been resulting in new projects like the (Tuberculosis) TB diagnostic research activities which have secured funding. VLIR-UOS project participation in establishing research studies on cancer diagnosis has been highly instrumental in the country's objectives with regards to the disease. The Belgium standards on PhD graduations have created leverage for SMU's reputation of creating quality PhD's, thus high demand for local research partnerships.

- The developmental impact of **project 5** has been limited so far since policy makers and governmental institutes do little with the research results. Determination of the impact of water variability, water pollution and contaminated fish on human health and the aquatic ecosystem in general takes place but increasing water awareness in the community through educators and learners from the local schools remains limited. All research results are sent to the government and water authorities, but nothing happens with this information. UL itself gives feedback, shares the findings and give advice based on the status of the rivers to community members, making a difference in their livelihoods (e.g. eat less fish because of metals found).

- Community outreach is part of UL's policy which facilitated the achievement of the developmental goal of **project 6 and** contributed to food security of the final beneficiaries of this project. For instance, some of the beneficiaries are now farming organically; research findings have helped a farmer to grow more nutritious okra crop. Small scale farmers have better crops due to being able to identity pests & improve crop production. Project 6 has engaged with local agricultural offices to communicate research findings. Some community members see the quality of research so much that they would like to have a consistent relationship with UL so they can always stay informed on the research data concerning their farming. Overall, the research done in this project makes people want to continue to receive the services of Project 6.

Overall, the performance assessments at project level have found evidence that research results have been used to inform, educate and advice involved local stakeholders. In some cases, results were beyond expectations. In other cases, results were not used satisfactorily by the involved stakeholders which limited the developmental impact of the research. The depth and width of integration of results within UL and dissemination and outreach of results at the level of the local stakeholders could not be assessed and therefore is not clear.

(iii) The programme has potential to contribute to impact

The examples above and in the project assessments illustrate the potential for development impact. In addition, the project assessments indicate that projects have developed spinoff activities or were embedded or linked to other institutions to ensure sustainability (see further below under sustainability) and to enlarge impact of the projects.

No evidence could be found though regarding the extent to which results at project level led to improved **policies at institutional level.** (for instance the development and integration of an learning policy in the teaching and learning policy of UL). Another example is gender: **gender integration** has been measured against the number of female students involved in the projects. Firstly, this indicator alone does not say anything about the gender integration at organizational level and how research is being done in a gender sensitive way. Secondly there exists no gender policy at UL level to which the

programme has contributed, as far as could be verified. The programme has not included activities that could have been contributed to this, although gender was a transversal topic in the programme.

The evaluation could not assess to what extent progress towards overall institutional and development objectives have become (yet) widespread within UL and/or beyond (at the level of communities, authorities or other institutions). During the evaluation, the evaluators found examples that illustrated the achievement of the objectives, but these do not say anything about the **widespread dissemination of the results**, and/or whether they are well **embedded within the university** and thus - where relevant - applied more widely within UL.

(iv) Overall (financial) management

Overall (financial) management has been given the score 'good', based on the project assessments and interviews with programme coordination (North and South) and the PSU- manager.

Overall (financial) management	Score 3 (good)

Overall project/programme management

During the implementation of the programme, the PSU acted as the **administrative unit** of the IUC programme, facilitating practical functionality of all projects. The unit ensured that proper planning was done, and monitored implementation of the programme, following the project management circle of the VLIR-UOS programme and ensuring that projects kept on track. The PSU relied on the project staff/leaders and students to provide the necessary project information for planning, monitoring and reporting. This was not always easy, as it required extra time of project staff/students at the expense of project activities.

During programme implementation, annual planning served as a roadmap for that particular year. PSU followed up this overall South planning and annual reporting of the projects and programme. According to respondents, the reporting method was highly itemised, which complicated consolidation of all these reports and required (too) much time. This sometimes caused some delays, for instance, the 2019 report has been submitted only in February 2021.

The management manual from VLIR-UOS is known by the relevant persons, but PSU has always been using the university manual and policies. Although the programme is externally funded, it needs to comply with the university policies and follow the university regulatory procedures.

Financial management

According to the PSU, **financial management** of the programme and projects was ensured, the unit providing a financial oversight of the programme. During programme implementation, reports on the project budget were continuously provided to the projects. Budget allocations needed to be efficiently done because if allocated budgets were not spent within a set time, the funds had to be sent back to the funder in euros.

The VLIR-UOS budget was managed by the **Limpopo University Trust** and not directly by the PSU, avoiding bureaucratic issues the PSU would have been faced with. Main function of the Trust is to assist with the development of the University by way of raising funds from corporate companies, foundations and grant-making agencies locally and overseas for the university's community outreach projects, research activities and other needs of the university such as library and bursary funding. The Trust furthermore initiates and develops links with international organisations and universities with a view to linkages and joint projects and activities. The UL Trust ensures that donor funding, which is

kept strictly separate from University funds, is spent in accordance with donor guidelines and this it is properly reported on. All donor funds are audited by the internal and external auditors of the Trust. The UL Trust also audits the PSU which is considered important for transparent accountability towards the donor. The VLIR-UOS funds have been audited by an external auditing service since the funds are managed within the Trust. According to respondents, all compliance and regulatory procedure have been working efficiently for the PSU and the VLIR-UOS programme. The meetings for financial reporting and updates were frequent, with the accounting firm being very strict, screening all financial documentation and challenging any errors or issues not compliant.

Some investments were **not sufficiently analysed in advance** (e.g. drone bought in project 1, laboratory equipment financed by project 4) and could not be (optimally) used (e.g. no license or trained staff) or maintained (too expensive) to ensure sustainable service delivery.

The PSU also ensured **compliance and regulatory aspects** of the programme. In some cases, for instance, academics from projects might have had project initiatives which did not speak to the scope of work or policies of the VLIR-UOS programme. Some emergency issues were also attended to if they had not been initially planned for, however, these had to be motivated for. Generally spoken, (financial) support provided by the PSU has been well appreciated with the exception of the budget management of specific expenditures in the field (difficult to obtain sometimes for specific field activities).

2.2.2. Sustainability

The evaluation has looked at the extent to which sustainability has been achieved, or conditions have been created to increase progress towards sustainability **(academic and financial sustainability).**

Institutional sustainability	3
Financial sustainability	3
Synergy and complementarity	3
Clear leadership and ownership	3

(i) Institutional and sustainability

During the phasing out, projects have worked to achieve institutional sustainability, although the efforts done differ from project to project. For instance, some projects, but not all, have developed a succession plan. Some projects mentioned to have attracted funds for PhD scholarships or have planned to increase the number of PhDs. Next to this, it was considered important to have a lab technician (which was the case) to be able to keep running the lab facilities And UL is currently setting up a postdoctoral training, funded by the institution. Some examples at project level are the following (see also project assessments):

> **Project 3** can continue with educators from local schools, but during the evaluation it was said that sustainability of the project cannot be guaranteed. No proper **phase-out plan** has been drafted on time and no reflection has taken place on how to look for additional funding or support to continue the project activities and ensure outreach towards more schools. It is also not certain if students who have not finished yet their PhD will get the necessary scholarship.
>
> Concerning **project 1**, UL wants to increase further the number of GIS PhDs Project 5 ensures institutional sustainability by means of a **succession plan** and has tied graduated students to

the university with an agreement, stipulating that they need to remain working at least for 6 more years at the university. Also **project 4** has established a succession plan, with the idea to train PhD student aimed at becoming supervisors. The succession plan of **project 2** includes the development of a research team on campus, the mentoring of students in healthcare sciences and psychology, and the training of staff to supervise and to enhance research capacities.

(ii) Financial sustainability

Some projects have ensured financial sustainability by being integrated into (existing) institutes, departments or units, or by attracting external funding. Also here, efforts done to assure financial sustainability differ from project to project. Some examples:

For instance, **project 3** has done no efforts so far to attract external funding or to develop a strategy to ensure financial sustainability. It is expected that UL takes over the activities but probably with a lower intensity and not ensuring full coverage of these activities. This is unfortunate since many more schools could have benefited from the services developed.

Project 1 has assured its future funding from UL because of the high relevance for the university, the quality of the data management systems and models established through the VLIR-UOS programme. Additionally, it is believed that in the future more funds could be attracted in collaboration with departments involved from project 2, 5 and 6. For instance, project 1 has worked together with project 5 and 6 in land use and aquatic eco-systems to attract funds (not sure if this was successful yet). It is also expected to attract more funds from (paid) training activities in the future.

Concerning project 5, financial means are being ensured by the Water Research Council to which the the project is attached. Thanks to the VLIR-UOS programme it is said that the project got funds from the NRF and SARChI, which contributes to the research image of the university. The NRF has also funded the scholarship of a PhD student. The South African Research Chairs Initiative (SARChI) was established in 2006 by the Department of Science and Technology (DST) and the National Research Foundation (NRF). It is designed to attract and retain excellence in research and innovation at South African public universities through the establishment of Research Chairs at public universities in South Africa with a long-term investment trajectory of up to fifteen years. The main goal of the Research Chairs initiative is to strengthen and improve research and innovation capacity of public universities for producing high quality postgraduate students and research and innovation outputs.

Another interesting example is **project 4**, with funding from different sources ensuring financial sustainability e.g. through the NRF, the National Health Lab Services Also MeCRU, a clinical research unit within SMU, has attracted funding to enable continuation of project activities.

Project 2 initiated the DIMAMO project, focused to strengthen community-based health, by health prevention programmes & strengthening of the primary health system in Dikgale. The project has achieved independency and was able to attract external funding. The project was also promoted to the South African Population Research Infrastructure Network (SAPRIN), in collaboration with VLIR-UOS, which contributed to receive funds from this Network and to infrastructural development of the DIMAMO.

Internal synergy

Multiple examples could be found of internal synergy, although at the same time it was said that within some projects, collaboration and communication between involved departments did hardly exist. In addition, the demerger between SMU and UL was detrimental for internal collaboration. The evaluation revealed that in fact, the VLIR-UOS programme remained the only binding factor.

Examples showing internal synergy are e.g.between project 1 and 5, with project 1 supporting project 5 with mapping. Project 6 has used the data collection system developed by project 1. Projects 1, 2 and 6 have collaborated to replicate results in other communities and not in Dikgale alone. Project 1 has bridged the data management/statistical needs of project 4. Overall, project 1 contributed in improving P2P communication. Project 6 shared information with project 2. Within project 4, the MSM project created synergies between departments. Another example is the collaboration between project 2 and 3 on health literacy.

External synergy

Several examples could be found regarding external synergies with other South African institutes and beyond the national borders, to enhance partnerships, to explore research opportunities, leading sometimes to enhancing financial sustainability and spinoff activities.

Some examples: **project 4** established partnerships with other universities such as the University of Pretoria, UKZN, UCT, Witswatersrand University and with universities in Sub-Saharan countries (a WAKA joint project[11], also with support from VLIR-UOS). Still in project 4, a Microbiology PhD student supported by the VLIR-UOS programme, doing TB research, is one of the flagship projects since the study resulted in a publication in The Lancet, resulting in the setup of a TB research lab and the attraction of funds from the NIH. In addition, making use of the NRF funded students in training of other students allowed the VLIR-UOS project's funding to be effectively allocated towards the laboratory. Concerning **project 5**, the collaboration with WRC and this project resulted in external funding and development of a policy brief (not clear for what purpose). Another example is **project 6** that started a partnership with ZZ2, a commercial farming entity. There exists a MoU partnership with Blessman Foundation. This foundation is supporting a woman cooperative of farmers who are called the Growing Hope Cooperative. The research is assisting the women cooperative to improve their crop production. This cooperative had started with growing vegetables, and has now moved to chickens, with their chicken poultry being based at the Mountain View farm (farmers not working directly with Project 6). UL has brought farming technology to the project and established a relationship with Blessman Foundation to do experiments on their farm and to provide training to the farmers e.g. including the aqua salvo treatment in the water to feed the crops, use of "worm tea", different variety of crops, improvement of crops, nematoids, etc.

(iii) Leadership and ownership for the programme

Communication and role division

[11] Ref. https://www.vliruos.be/en/projects/project/22?pid=3735

Communication/interaction within the projects has taken place with **different results**; sometimes this went smoothly, sometimes there was too little communication and information sharing between involved departments. Between projects and other departments and in some cases with stakeholders outside UL, communication such as sharing of information, first results, etc. could have been better sometimes. Some examples:

For instance, in project 3 there were no intermediate levels of communication between the Heads of Departments resulting in working independently from each other (Department of Education and Health Literacy). Better communication could have ensured more visibility of the project. A reason for this (but not necessarily the only reason since little active involvement of the heads of department could be noticed) could have been turnover of staff at the level of the head of department.

At the level of project 4 (SMU), communication with project 1 functioned well: SMU had a weakness in statistical input, but this was well bridged by project 1 data management. There was also interaction with for instance project 2 when analyzing data. At the same time, after the demerger from UL, the only binding element between both seems to have been the IUC programme. Unfortunately the demerger has a negative impact on the communication and exchange of information between UL and SMU.

The Joint and Local Steering Committees monitored progress of the projects and overall programme during implementation, as part of the working structure The JSC were yearly held in South Africa, for experience sharing, to learn and exchange lessons and take joint (strategic) decisions when needed. The quarterly held LSC followed more closely the progress made. The evaluation revealed that it is considered a missed opportunity to not have organized the JSC in Belgium, to give the opportunity to exchange and learn more from Belgian counterparts.

Overall, **roles** were said to be **clear between all counterparts**. The expertise from the Flemish counterparts was appreciated by the Southern project team members. Some South project respondents would have liked to see more involvement of their Flemish partners in the project (PL and/or Flemish expertise from the project team, to benefit more from their knowledge and expertise or to ensure more closely follow up of the PhD students.

Interaction with the highest university leadership at UL seems to have been effective: the university leadership supported the programme and according to the programme coordination , there was clear **ownership from the university management** for the programme. At the lower levels, ownership for the projects **differed from project to project**, as indicated above. Some heads of department were well involved, while others hardly knew what the project was about (although their department was involved in the project).

(iv) Remaining challenges in the context of sustainability

Although the previous projects have undertaken many efforts in the context of sustainability, some challenges remain: Supervision capacity is still needed and needs to be included in succession plans, both in numbers as in competencies to sustain and nurture PhD students for institutional sustainability. Not enough capacity in terms of supervisors has cause high work pressure and the risk of burn-out. Retention of staff remains a challenge. Further, phasing out is currently halted because of Covid-19 which has hindered activities. More involvement from the intermediate management/dean level would have helped in creating more awareness and marketing of the IUC programme in the future. The demerger of UL- SMU turned also out to be quite demanding: establishing new ways of operating was

difficult according to respondents and require time, as well as it has been challenging to maintain and keep a sustainable working relationship, being VLIR-UOS the only binding factor, according to respondents.

2.3. Evaluation per project

2.3.1. Project 1

TITLE OF PROJECT: DATA MANAGEMENT, STATISTICAL AND GIS

Introduction

Provides data management, data analysis, GIS and remote sensing as well as efficient ICT services at UL and supports the VLIR-UOS Programme. Provides staff and students with knowledge in data management, data analysis, statistical analysis, GIS and modelling to generate information through research in risk and vulnerability in relation to climate change.

Factual data

Hosting faculty	Risk & Vulnerability Science Centre
Number of staff in research group	8
Status of staff (fixed position, service contract, others)	Contract & permanent
Number of PhD finished/ongoing (with VLIR-UOS funding)	Finished 2 & Ongoing 3
Number of PhD finished/ongoing outside VLIR-UOS funding	Finished 5 & Ongoing 5
MSc involved in the project (accumulated)	13
Number of publications in peer reviewed journals (PhD and MSc contributions)	Total 72 Phase 1 = 22 Phase 2 =50

Evaluation questions

Relevance	
1.1 Responds to needs Score: Excellent	- Project one is continuously in support of all projects through providing quality data management services. - This includes work data base & statistics relevant to all projects & UL as a whole - Crosscutting all VLIR-UOS projects & provides support to all projects - The ICT department of Project one is currently in charge of managing the whole infrastructure of the University. - The University's research output has increased since VLIR-UOS started funding the development of data capturing systems, therefore contributing highly in the ranking of UL - Project one has also initiated empowerment initiatives for local communities, training them on Climate Change. - Students moving from Masters to PhD has really improved the status of the universities. - The video conferencing expert skills acquired from international training and exposure are highly relevant to the university as the ICT department is able to implement high quality online connectivity for the institution at large, especially during Covid 19. - VLIR-UOS has assisted Project one participants with expertise on developing unified messaging platforms like google platforms currently adopted by the university. These platforms have assisted a lot during the COVID 19 pandemic, the university is lecturing through all these expert ICT services, making a rural based university able to operate at international standard. - VLIR-UOS Machinery, equipment, infrastructure is now being used for lecturing & research across departments & beyond VLIR-UOS projects meeting UL needs. - Equipment overused, need more - A lot of publications have exposed the University and highlight the quality of research work done by the institution. - Other local Universities request to use these VLIR-UOS machines and others just come through to the university to make use of the equipment. - UL students from the project are working with farming projects, helping out on determining scientific issues related to agriculture. The students visit the sites and take samples of the soil being farmed on, do the research and communicate research finding with the farmers. This research helps the community a lot to improve their way of farming - UL is involved in the aquasalvia process of water treatment, earthworm tea farming and climate change studies in relation to farming

1.2 Synergy Score: **Good**	- Improved ICT has resulted in university's interdepartmental collaborations. - Project one team contributed towards the Ga Dikgale project by transforming the project's paper-based data capturing into an electronic data capturing system. - Through the support from GIS, DIMAMO work is made to be more efficient in relation to community access. - Assisted in transformation to paperless database system for DIMAMO & managing all projects databases - Exchange in the use of resources between partners established during the VLIR-UOS project makes work much easier now for the students. - Equipment purchased by VLIR-UOS is used by all the team members, some of the other equipment is also used by the whole institution. - Some of the Project 1 team is cross cutting coming from the other VLIR-UOS projects - Whilst doing scientific work on Climate Change, they are also involved in ICT and GIS.
1.3 Coherence Score: **Good**	- ICT benefits are not for Project one team members only, but for the whole institution, allowing for synergies amongst departments and project activities. - The project is currently working on issues of climate change and farming with The Mountain View Research and Training Farm. - VLIR-UOS "gave birth to a successful child, which is DiMAMO, initially a very small group of people collecting data. The project started with just 7 000 households, further increased to 37 thousand population. To date, populations has increased to 105 000. Project one was instrumental in assisting with the management of this data base. - The project is collaborating with other data centres, collaborations with science and technology on covid, HIV testing done in the field. - VLIR-UOS programme is also reaching out to beneficiaries not directly funded by the programme but benefiting from the programme's resources e.g., Geography students and high school learners benefit from the machinery purchased by VLIR-UOS through GIS user friendly training manuals. - Trained geography teachers & students in GIS - The software purchased and licensed by the VLIR-UOS funding in ICT playing a huge role in supporting and maintaining the system for UL
Final judgement/comments	

• This project is not only extremely relevant, but also essential for the university and for all the projects related to VLIR-UOS as it provides the statistical training base and support in terms of ICT, statistical analysis and technological support for most departments at UL • The project is responsive to the National Development plan highlighting key challenges facing South Africa, which the government believed can be addressed by the ICT sector through innovative learning which would facilitate an ongoing improvement of educator skills. • UL benefited from the Project 1 on video conferencing, unified google platform & Eduroam. Eduroam is an international roaming service for users in research, higher and further education. It provides researchers, teachers and students network access when visiting an institution other than their own. • The project one through the VLIR-UOS enabled this project during lockdown (due to COVID-19) to assist the UL community at large with the online platform.	
2.1 Academic Score: good	- The current ICT Infrastructure Development Manager had partnered with the University of Hasselt. He acquired expert skills on ICT Security and Networking. - Project beneficiary acquired an MSc degree under joint supervision from UL and Hasselt University and now works in Project one as a Data Manager. - Another PhD graduate is a lecturer in the Department of Geography and Environmental Sciences, with a lot of focus on GIS. This graduate also works as a supervisor. - Students start with VLIR-UOS programme to do a PhD and are offered an opportunity to do a joint PhD, and they then graduate as internationally recognized PhD students. These are individuals who had just initially started as Project 6 members. - A Master's graduate now doing PhD whilst lecturing at the Department of Environmental Studies is also a beneficiary of the VLIR-UOS programme and has received what he refers to as" a supercomputer" from the programme. - GIS training manual has been developed and used by all projects. - Training & support in statistics, remote sensing, crop modeling, GIS "boosted skills & knowledge from zero more than something". - Project one members are motivated to do their PhDs because they deal with student publication journal data as well. Some Project one members are collecting data from back in 1995, all thanks to VLIR-UOS expert training programmes. - PhD graduate works as Climate Change scientist and researcher, whilst also supervising students. - VLIR-UOS beneficiaries in Project one are now involved in water quality research. - Some members have published 5 publications, attended conference, all supported by VLIR-UOS. - The other published 7 publications and attended VLIR-UOS funded conferences.

	- Others mentioned a number of publications done including book chapter. - Journals get reviewed of professionals from international and national collaborations. - Over achievements on targets of PhDs, publications - Build capacity in statistics, ICT, data analysis, data base management. - Without project 1 some would not be able to complete a PhD - Important relationship with North universities, provide assistance & training in stats & ICT. - The skills of the lecturers are enhanced through these international skills acquired through the VLIR-UOS programme. - Some of the PhD graduates are outside of the UL contributing to research. UL continues to absorb the graduates, and others receive international employment offers. - Beneficiaries go on to supervise students, currently managing Masters. students, who are also using the equipment funded by VLIR-UOS. - Project assists in intense supervision of other PhD students. - Appreciated external Belgian supervisors. - GIS experience allows to apply GIS techniques in different areas helping in the executing of a lot of projects. - VLIR-UOS programme journey begins at the level when there are just students at the University to being allocated a VLIR-UOS programme fund to being PhD graduates who end up as Supervisor. - Students are encouraged to become academics by the Supervisor and are invited to join the programme activities of VLIR-UOS projects for inspiration. This results in students being motivated to the extent of wanting to do joint PhD with Belgium. One of the Project one beneficiaries attested to this by sharing on how they graduated in 2017 with joint PhD as a Climate Change Research Scientist, became a Deputy leader of the programme they had joined as a student and is now a supervisor for PhD students. - Suggest to involve supervisors in training to help them follow up on progress of students - The VLIR-UOS helped with equipment, mobility, supervision as well as improved ICT. - The VLIR-UOS programme has enabled PhD students to publish articles for journals, a beneficiary confirmed having several articles published. - VLIR-UOS enabled student opportunity to meet and collaborate with top notch specialists in field of climate change, modelling UCT, ARC & SAIR - Gained respect of peers, consulting for govt & companies

2.2 Development Score: **Good**	- Climate Change research work done on the farms, is currently helping the farming projects to come up with different ways of farming. This has resulted in local farmers adapting to new technologies, therefore implementing the outcomes of Project one Climate Change research findings. - Project one team has trained farmers in different districts around the province, on climate smart agriculture. - One of the highlights of Project one initiatives is on mapping the impact of climate change on different crops. - Students travel overseas, on atmospheric science studies which is a global research project. - Organic farmers are assisted by the project with accreditation, they are able to train other farmers. These farming projects also gain a lot of support from government. - The climate change work done by the project on the farming project is effective as it improves farming methods. - The scientists test the water and bore hole water for the farming project, helping to prevent the project from spending unnecessarily. - UL assists the project when interns come through on site, by sharing their scientific and the technical skills in research. - UL scientists implement the compost worm tea treatment on the farm, helping them with their crop. The farming project has also learnt that you can use manure and natural products for better farming. - Climate change mapping impact on different crops provides model, produces maps with GIS & Satellite images for farmers. - Assist with WRC to assess impact of water stressors, important for Government, farmers & communities. - Government & communities not sufficiently aware of UL research capacity & impact of climate change needs more engagement & awareness. - Agroforestry assisted with tree planting on climate change & how to mitigate land degradation. - Farmers trained in science week on climate change & how to mitigate land degradation. - The researchers come to the farm with their equipment to take soil samples and water for scientific study in order to inform the farmers on how best to grow their crops. - After research trees left for benefit of school. - Yield of crops given to farmers after research. - Focus group participants on cost benefit analysis of different crops. - Findings shared with moringa farmers in terms of soil nutrients & in the moringa leaves. - Wanted to have workshop to share research with WRC but didn't. Caution/concern that research should not sit on shelf but be used for development

2.3 Scientific quality Score: Good	- Beneficiaries share additional scientific knowledge & gain expertise & benefit from the VLIR-UOS programmes in SADC & Region through WAKA & exposure through conferences, footprint with the SADC countries. - This was achieved through the intercontinental academic engagement through VLIR-UOS research workshops and conference where beneficiaries had opportunities to present their work and learn from others expertise. - VLIR-UOS provided training in statistics, and different statistical packages & modelling, therefore equipping graduates with international levels of statistical skills. - If all the PhDs at VLIR-UOS were "sandwich" PhDs it would have been better, international academic development is good, it improves academic status, and academic quality. - The use of labs/equipment in the north & with northern supervisors helped with good scientific quality research. - GIS has been highly visible and has also trained students who are now working at DIMAMO as data capturers. - Project one has influenced the use of GPS's in locating all the households that are benefitting from the DIMAMO project. - Opportunity created through VLIR-UOS for US joint supervision on PhD on atmospheric science has global relevance

Final Judgement comments:

- Many PhD students would not be able to produce & complete their PhDs without the support of project 1.
- This project enabled some PhDs to materialize & the plan is to go for more GIS PhDs.
- The collaboration with the North helped to improve infrastructure, knowledge & skills of team members to be able to provide high quality research & services (ICT, data base, statistical services, GIS etc.) to the other VLIR-UOS projects, UL community and the surrounding community (farmers & Government departments) are able to benefit from this research.
- The reputation & image of UL improved through high quality of research & access to GIS & statistical data for good quality scientific research.
- Project one is highly innovative & skilled to provide service to the other projects & UL community.
- Projects achieved targets & beyond.
- The project has produced planned training manuals.
- More would be achieved if government & communities (including corporates) were more aware of UL GIS, remote sensing etc., → value & impact could have been larger & deeper.

Efficiency	
3.1 Intermediate results Score: good	- Learning about eduroam & implementing this technology helps when visitors come, they are able to connect automatically, and the UL members also have easier access even when outside of the university, because of the highly technological systems set up. - Previously, ULdid not have enough bandwidth, now internet supply is at 10 Gig. Internet service access is funded by government, but only providing 35 meg. Previously limited by the capacity, after 2016 capacity increased. - Challenged by general internet connectivity in rural areas & limited bandwidth. - Attended national conferences, accrued a lot of personal development/ benefit from the VLIR-UOS project. - Students got lecturer positions or promotions after MSC/PhDs completed. - Appreciated scholarships (fees fully paid for 5 years), access to resources/facilities.
3.2 Relationship input-output Score: Good	– Project one is using all of the skill acquired through the exposure gained from international collaborations. – Multiple benefits across projects through use of VLIR-UOS project resources, equipment & infrastructure, and UL community. – “Outsiders” from other universities national & in the region, requesting services & information. – GIS software license helped UL to have 1 site for 500 users instead of working in silos & financially more cost effective.
3.3 Project management Score: good	– VLIR-UOS financial support ensured that nothing hinders quality data collection processes for the local PhD beneficiaries, as well as those doing joint PhD’s with Belgium. – Beneficiaries confirmed how the programme fully paid for their PhD expenses related to achieving the desired academic result. – Others even told of how the programme paid for their expensive data collection activities, including spending over R800 000 for a data collection machine needed by a specific PhD graduate. – Top management does not always understand how valuable the GIS and remote sensing tool is. – There is a great need to do GIS and remote sensing awareness workshops. – Management of funds by the UL Trust was very efficient. There is a financial management system from Belgium which was very strict and very efficient. – There was a 15% budget allocation flexibility for emergencies. – Hosted writing retreats.

	– Antwerp University used to assist with financial gaps, incase monies were delayed for planned project implementation. – Succession planning is essential and should be established and clearly communicated and implemented amongst the projects. – Challenges associated with capacity building needs a efficient succession plan. – Transferring of skill and capacitating new management onto the programme needs to be implemented from the PhD students who have benefited from the programme. – The number of students for intake is huge, but the programme currently cannot take all of them. – A drone was purchased but there was a change in legislation soon after the drone was acquired. Because of this the drone could not be used. – Heard about VLIR-UOS funding from others student or supervisors who was funded through VLIR-UOS, suggest more transparent advertising of VLIR-UOS programme.
Final judgement/comments	
• The use of facilities across projects & UL makes the project efficient in terms of resource use. • The purchase of the drone was a pity and underscores the importance of due diligence on a product, the requirements & applicability as well as cost benefit analysis. • A plan for dealing with the expensive drone is needed or it needs to be sold & the funds put to better use. • Project one is continuously improving networking but is challenged & limited by internet connectivity & bandwidth, this being a rural province. • The VLIR-UOS programme's ability to be responsive to financial needs of developing ICT in the university has established a solid platform for the University to be competent, when it comes to internet connectivity, on which to build. • The university is now in a position to build on the foundation of the ICT technologies introduced by project one. • Appointments to lecturer positions after postgrad & promotions to senior lecturers/HoD	

Sustainability	
4.1 Institutional Score: Good	- Plan to push for more GIS PhDs so that there will be supervision for new students. - Facilities, infrastructure, laptops, most of the equipment have benefitted the UL community & this will continue Receive future funding because of the quality of the data capturing systems and models established through the VLIR-UOS programme.

4.2 Financial Score: good	- UL financial support for project one is in place - Project 1 and 2 will definitely be collaborative & continue to attract funding. - Project 1, 5 & 6 work together in the land use and aquatic eco systems for better funding possibilities (not sure what the outcome is so far) - Project 1 will continue to attract funds because of the string of training elements embedded in the project (but not clear how and if this takes place at the moment). - Project sustainability is said to be assured.
Final judgement/comments	
• The project has great access to more funding and has already secured funding. Finances are secured by UL. • Intends to generate income continuously as training is expected to generate income. • Institutional support for the programme due to importance of project to the university. • Project one will continue to provide training, technical support & assistance for VLIR-UOS projects & others. • Need to build supervision capacity & increase number of supervisors to sustain & nurture PhD students for institutional sustainability. • Consider planned & targeted succession plan for supervisors. • Potential for increased collaboration with Government could be pursued through education & awareness to additional resources & mitigating climate change.	

Impact	
5.1 Academic level score: good	- VLIR-UOS supports PhD students doing crop modelling, a subject they knew nothing about before VLIR-UOS, but are now just about to graduate with joint PhD. These beneficiaries are all fully funded by VLIR-UOS for publication of manuscripts. - With the VLIR-UOS programme, impact is at academic and individual levels, changing student lives and boosting confidence levels. - Ex-students employed in key positions contribute to climate change mitigation as well as personally improved circumstances. - Beneficiaries of the PhD funding are now supervising other students. - Those with joint BE & UL PhDs are more marketable & the difference in quality is visible & enhances UL's reputation. - There are some employed within the UL, some leading the VLIR-UOS projects (e.g., P1.), some with positions at other universities etc. - ICT/Project has more (young) men in the Project than women. - Targets achieved.

5.2. Development Score: good	- In terms of GIS, there needs to be more PhDs so that supervision can be increased. - A lot of students have joined SANSA, and they have benefitted from the VLIR-UOS programme. - Some students who are employed elsewhere, come back offering partnerships with their current employers and the universities. - VLIR-UOS beneficiaries from the GIS project are now entrepreneurs, starting their own environmental and GIS consulting services. - Government departments have approached GIS for collaboration. - Other graduates receive funding to run GIS projects through the support from the university. - Project one team members have developed the short course training manuals, which currently need accreditation to train so that the project can generate income. Quality assurance has been finalised, however, final stages have been delayed because of COVID. But as soon as this has been achieved the project can start funding itself. - Reaching over 100 000 now, compared to 300 000
Final judgement/comments	
• The transformation of the whole UL ICT infrastructure through the assistance of Hasselt University has strongly contributed to the improvement of the ICT infrastructure at UL from the time of inception of the VLIR-IUC programme till present. • The project has the potential to generate income for the university as it may be able to provide consulting services, providing GIS services and other ICT related services, whilst creating awareness in support of the ICT sector, which may attract more funding in the process. • The project is in high demand because of the international expertise acquired internationally. • Pairing with Belgium improves academic qualification status; provides international & national recognition. • The ICT training modules developed will also generate income for the university. • Project 1 has more men than women in keeping with the IT sector tendencies, which is usually known to be dominated by men. • Targeting women in this project will help the gender balance & improve the number of women in the technology area. • Gender inclusion is not planned but accidental	

Other findings related to project 1 that also touch/are related to the overall programme

- Wasteful expenditure on equipment that cannot be used or may not be used optimally e.g., the drone (& 2 laboratory equipment at SMU lab)
- Need to build supervision capacity & increase number of supervisors to sustain & nurture PhD students for institutional sustainability.
- Consider planned & targeted succession planning & training for supervisor. Applicable across all projects except Project 5 - appears to have this in place.

- Gender plan is not in place; it is largely dominated by women – who are participants &/or who are in the team, but women are not in the technical spaces (like P1) nor in senior leadership. Largely women predominance in health care in traditional roles as carers (the increased number of women in some projects is accidental not targeted).
- The movement of staff & student to other universities should not be seen as a problem, but rather as an indicator of the good standard of academic and research quality of UL – this is an achievement for UL.
- The retention plan of staff (salary packages, benefits, contracts, staff training & development etc.) & employment of ex-students and succession plan (for human resource sustainability) should be focused on.
- Generally (& in SA especially) people tend to leave rural areas even if the salary is lower in the city because city life translates to better access to resources, better amenities and the perception of higher status associated with urban lifestyle. Staff retention is not an accurate indicator of how well the programme or UL is doing.

2.3.2. Project 2

TITLE OF PROJECT: PREVENTION CONTROL AND INTEGRATED MANAGEMENT OF CHRONIC DISEASES IN RURAL COMMUNITIES OF SOUTH AFRICA

Introduction

The project promotes prevention, control and integrated management of chronic diseases in Ga Dikgale. Focus on community-based health, health prevention programmes & strengthening of the primary health system in Dikgale called Dimamo. This includes demographic surveillance and monitoring through the Dimamo Population Health Research Centre. The centre was adapted to focus on COVID-19.

Factual data

Hosting faculty	Humanities and Health
Number of staff in research group	8
Status of staff (fixed position, service contract, others)	8 (fixed positions)
Number of PhD finished/ongoing (with VLIR-UOS funding)	5
Number of PhD finished/ongoing outside VLIR-UOS funding	3
MSc involved in the project	34
Number of publications in peer reviewed journals	4

Evaluation questions

Relevance	
1.1 Responds to needs Score: Excellent	- Project highly relevant for its primary purpose to reduce chronic diseases and its effects within rural areas. - Clear links with UL vision & national development plan - Project 2 fully acknowledged that rural community health awareness has been neglected, therefore project interventions are aimed at bridging the gap through various and effective community-based activities & because the university is based in a rural area. - The project has established a strong relationship between the University and the community members of Ga Dikgale and VLIR-UOS projects. - Tribal Authority beneficiaries can confidently testify on how effective the VLIR-UOS project is in their community, hence the immense support and active involvement of Chief of Ra Digkale in the project. - Intervention research projects by PhD students in the communities have been highly instrumental in meeting needs of the community. - At a National Level, VLIR-UOS has had footprint impact through Project 2. One of the visible footprints is the DIMAMO (health and demographic surveillance project) which is the birth child of Project 2. - Health awareness support groups have been established and are engaging from the local clinics. - The VLIR-UOS has increased research skills, producing tangible outcomes. - Some machinery like the PB testing machine has been donated to local clinics. Healthcare services have improved after they were trained, local communities are benefiting from this. The National Department can see these improvements, hence the currently existing strong partnership with the project. - Project 2's objective was to prioritize the health of the community and come up with strategies to intervene. - Community care workers gained a lot from the VLIR-UOS programme through the training programmes implemented by project 2. - Students doing mental health disease, worked closely with community care workers who are now training their communities on the disease. - Traditional Health medicine practitioners have been trained on hypertension, and the importance of referring patients to western medicine before complications. This project commenced with much cooperation from the traditional health practitioners, until the government started to impose regulatory systems which they were not willing to adhere to. This therefore caused the traditional healers to be discouraged. - Chief Ra Dikgale confirmed that UL did approach him and formally introduced the community awareness intentions they had for the people of Dikgale and the Limpopo province as a whole.

	- Chief Ra Dikgale is a Traditional leader stakeholder who is not only in partnership with the programme, but also a beneficiary of the initiatives implemented by UL because of his participation in all the health awareness activities.
1.2 Synergy Score: **Good**	- Project 2 works in partnership with the Department of Health, who have adopted the programme of training home-based caregivers. - Project 1 & Project 2 collaborate well together. - Interactions internationally and nationally on the SPICES project (Scaling up Interventions to Prevent Cardiac Diseases), a project that started 5 years ago, which was born out of VLIR-UOS, has delivered intensively with increased PhD student outputs and research publication outputs. - Project 2 goes to communities with interdepartmental partnerships, to run workshops and awareness campaigns, on issues affecting the communities. - Some machinery from VLIR-UOS, including blood pressure equipment, weighing machines & others were handed over to the Medical Science Department. - Collaboration still exists, there are interdisciplinary working relationships with VLIR-UOS projects & UL departments outside VLIR-UOS projects & ex-VLIR-UOS students working outside. - VLIR-UOS beneficiary is part of the Mpumalanga Research Committee now. - Collaborations with the clinics enable Project 2 to continue, community health care workers are absorbed by the clinic. - The data collected through the healthcare workers allows for improved health services, since nurses are now aware of the challenges on the ground, through information from the project. - Mental Health Network, made up of SADC and International Universities is an additional opportunity for the project. - Traditional and Western health practitioners for mental health networks were established through the VLIR-UOS support and are still functioning. - Tribal authority involvement is active in Ga Dikgale - When the Belgium counterparts formed part of the site visits to the community, they were able to express their views on the impact of Project two, there was high community engagement in the presence of the Belgium team. This process also resulted in community members suggesting research topics and interventions, which would further develop the project.

1.3 Coherence Score: **Good**	- Multidisciplinary approach brings in health & mental health & various disciplines to provide holistic care. - Amalgamation of 2 projects after MTR helped to control & manage disease in Ga Dikgale community. - Prevention, case management and treatment has impacted on the health & welfare of the community. - Tribal authority was involved in the broadening of services & impact in the community wellness at the clinic. - Research, education programmes & activities in community & at clinic through multidisciplinary team proven documented positive results as evidenced by DIMMAMO. - This project was able to develop the electronic patient register, but not yet implemented. But this is in the process of being implemented in the DIMAMO, for funding is being sought (where it will be called a Link to Care). - Project 2 pharmacists, dieticians and psychologists would form part of the Community Health care workers training programme. The project 2 initiatives are highly based on interdisciplinary collaboration. Project 2 deals with rural communities, produces staff members, there are 3 graduates now working in the health sciences. Other students are managing the research of the university. - UL newsletters acknowledge the Project 2 related highlights. - Lost student & lecturer due to COVID-19 (lost more people at UL in second wave)
Final judgement/comments	
• Project 2 merged after the midterm evaluation & grew out of the VLIR-UOS health & demographic surveillance. • The project continues to survey the community & implement relevant programmes that benefit the community through its holistic multidisciplinary approach and directly community involvement & implementation. • The various national & international collaborations play a significant role in project 2 implementation. • Partnerships & spinoffs resulted from the VLIR-UOS funding. • Unfortunately, Covid-19 has led to the loss of staff members and students.	

Effectiveness	
2.1 Academic Score: Good	- The project does body mass indexing, measuring for early diagnosis of hypertension, for preventing unnecessary deaths. - Belgium supervision with qualitative and epidemiology expertise, has been highly effective and beneficial to the beneficiaries. - Other students have acquired PhD's through the Antwerp university and UL collaborations. - The VLIR-UOS support allows for international exposure, learning from experiences from other countries. - A project beneficiary had an opportunity to go to Uganda and present his work and also wrote a manuscript, two journal articles whilst a PhD student, the VLIR-UOS project paid for the publication of these journals. - The project has produced PhD students, some directly funded, and indirectly supported by VLIR-UOS through availability of resources and workshops. - Students at Master's level, have also graduated through the technical support by the project. - Opinion is that they have done well in producing PhD and Masters students. - There is a challenge with the joint registration of the PhD, registrations do not happen at the same time at Antwerp University, causing delays in the process of graduation. - If the registration process could happen at the same time, it would help, smoothen the PhD study process and fast track graduating. - Interdisciplinary collabs for data, thus producing PhD in nursing. Using the data from the project. - Quantitative research driven unit (DIMAMO), project now has a report on prevalence done, hypertension, diabetes, HIV & other chronic diseases. - Beneficiaries are grateful for the positive contribution towards their academic development. - Belgian supervision of students is sometimes stressful when the waiting time for feedback is felt long.
2.2 Development Score: **Excellent**	- The number of people with correct knowledge of chronic diseases, was increased by more than 10% of the population, according to interviewed project staff. - Cholesterol awareness has also been included into community awareness initiatives. - Traditional council members are now also trained on chronic diseases. - Communities have benefitted because of the home gardens programme. - Mobilizing communities to be aware of the chronic diseases, through its community engagement activities.

	- The Project has also initiated an additional community support element where team members meet up with families of the deceased and engage them on the causes of death, making the family members understand the cause of deaths in their families, thus preventing undetected health related deaths in the family. - The project-initiated sport and health awareness activities introduced for orphaned and vulnerable children as well as Old Aged Homes. - The training programme supports HBC & nurses. - Helped patients & nurses' perception & understanding of stroke, not to delay in getting help. - Trained community care workers are now training communities on diabetes. - Students doing mental health disease. - The community health workers' knowledge development became essential. - UL students started with visiting homes, door-to-door. Started with the chronic disease, identified & involved youth in the project. They were motivating the old people, a joint working relationship, health, education, agriculture, and sporting activities. - Old people attending the local clinics because of high blood pressure and sugar diabetes. They were taught about the importance of drinking water and doing exercise. On Tuesdays they are at the ground, Wednesdays they do aerobics, and Thursdays they walk. - Youth and elderly do health exercises together. - 70-year old's walk for about 6 kms. The youth carry water for the elderly. - The Chief also joins in and walks with the groups. - The chief explains that he is also actively involved in the programme and "looks this good" because of this programme. Chief Dikgalo is living by example when he joins in on community walks. - The project benefits the community because people started knowing about high blood pressure, drinking water and eating a healthy diet. - The local clinics now have the garden, teaching local community members that they should grow their own at home, encouraged by the project. - The VLIR-UOS gave birth to DIMAMO, the chief indicated that he is part of a committee at DIMAMO. - The old people are taught how to write their names and read books, and they exercise. They are now able to sleep well, because they are healthier. - The Chief also participates in the reading exercises and he has been reading better since the VLIR-UOS programme. He said this may motivate him to write a book at a later stage. All this is because of VLIR-UOS.

	- The Chief also explained that before VLIR-UOS programme, people at Dikgale used to dump waste everywhere. The Municipality improved and now there is a dumping site. - 12 Traditional leaders have a Goshi Forum, for the improvement of their own communities and link with the Dimamo project. The Chief is highly visible in the forum. - Dimamo people work in Ga Dikgale and collect data and contact with families to follow up with them. - Dikgale data base is up to date. - People in the communities are now healthier because they exercise instead of taking medication. - There were health awareness campaigns and roadshows on HIV, involving a lot of young people. These were very good outreach programmes. - The agriculture training and development element was strong, people gained a lot more information on agriculture. - The community is now working well together more. - Field work at Dikgale started with volunteerism but now the field workers are getting a stipend. - The Chief said that the Field Workers acquire knowledge and experience in the field, check heart rate, sugar levels and HIV tests, and referred people to the clinic. - The VLIR-UOS programme had a strong educational element in it. - Because VLIR-UOS project activities started to make Dikgale more visible, with UL vehicles coming through to the area (and other government stakeholder coming through), the Chief lodged a complaint with the Municipality about the access road. He captured images of all vehicles coming in and out of their centres and how they struggled to get there. All the images were shown to the local municipality and the access roads were constructed. This according to the Chief has been as a result of VLIR-UOS. - UL should propose to implement this VLIR-UOS in other areas where the communities are poor and in need. - The programme should be continuous, empower people and develop communities. - When young people see University cars, they are encouraged to also want to study further and be academics. - However, strikes and riots prevented the project from functioning efficiently. - Presented findings at conferences and workshops to create awareness on health literacy with teachers, academics, health workers & learners (e.g. wash hands).

2.3 Scientific quality Score: Good	- VLIR-UOS provides opportunities for students to acquire skills on qualitative and quantitative research and statistics. - This has allowed for skills transfer, and improved working models. - Exchanges & courses helped to upskill students. - There has been recognition from Government Departments, local universities & from the region, for research & innovation. - Combination of psychology & health sciences research improved research quality & recognition. - Impact research quality in Mpumalanga improved. - Raised profile & reputation of qualified students through upskilling in research - see tangible outcomes. - Health professionals & health care nurses, HBC quality improved. - The Belgium data analysis expertise improve the research work & expertise for the beneficiaries. - The project has benefitted greatly from having the Belgium supervision skills.

Final judgement/comments

- The academic target was reached.
- The project was able to reach its developmental goal and beyond in terms of bringing health awareness to community, nursing/health care staff and changing people's minds & perceptions.
- Healthy living & lifestyle changes are more evident now.

Efficiency	
3.1 Intermediate results Score: good	- Research protocols/proposal were done prior to doing PhD, so this target was reached. - Results achieved. - Project 2 has exceeded the target of all the IRs (work packages). - Two PhDs currently have capacity to manage on their own and publications on target was achieved. - Publications by the project are in the process of being published. - A beneficiary shared that, for them, there was not much interaction with VLIR-UOS, but in the second year, once they were familiar with the VLIR-UOS partners, and other projects, things got better. - Travelled internationally to attend short courses (e.g. on epidemiology for three months) and international conferences - Attended conferences for the first time. - Attended three months in an exchange programme. - Another beneficiary previously worked with the Department of Health, that is why he did the PhD. - This beneficiary is now supervising Master's and PhD students, supervising more than 20 students doing Masters in Human Health, and has graduated not less than 10 graduates. He is currently supervising 5 PhD students, for three of these, he is the main supervisor; the other two are jointly supervised. - One beneficiary is administering ethics activities for the university, the other is employed in the Department of Nursing Sciences belonging to UL and the other is part of a committee which is evaluating proposal content and quality. Tebogo, a Professor in Nursing Science, acting as Executive Dean - Faculty of Health Sciences, and a Deputy Project Leader, for project 2. - Beneficiary employed as research assistant when doing MA

3.2 Relationship input-output Score: Good	- Project 2 interventions, through Ra Dikgale projects, upskilling health professionals so that they can provide efficient healthcare services. - Mr. Sodi trained as a Clinical Psychologist, now a Professor and a Project Leader for Project 2. - PhD student in the department of Nursing Sciences is supervising students, whilst having supervised at PhD levels. Currently in the process of graduating a PhD student this year. - VLIR-UOS project supervisors inform students about the programme and offer them an opportunity to do joint PhD. - The VLIR-UOS beneficiaries have gained academic and financial support from the programme. The current DIMAMO project leader completed his PhD though VLIR-UOS, he got a Doctorate, and was employed by the National Office of Health Science compliance, only worked there for two weeks, was later called in by the UL Vice Chancellor to come back as a Senior Lecturer. Interactions with the local clinics in the area has been highly effective. - VLIR-UOS has been able to fully finance the training. - Community Health Care Worker's training was funded through the VLIR-UOS programme. – Data collection & field worker payment could have been done differently. Non-payment resulted in the discouragement of field workers, loss of data, gaps & missing information. – Full payment for the data collection would result in better quality data, which is an integral part of research. – Where students are used for the data collection, stipend is not a problem but using field workers/data collectors requires some form of payment. – Looking at **creative ways** of compensating data collectors.
3.3 Project management Score: Good	- Support to meet with Supervisors was available. - Equipment was made available for student research and data collection. - Purchase of laptops was made possible through the project. - Received scholarship for the fees and funding throughout studies. - Data analysis report submitted. - Support from the VLIR-UOS PSU team was amazing, all processes were smooth. - There was good financial support when travelling internationally for workshops and training programmes. - Some students were not funded for field work data and had to cater for the cost. - Laptops and voice recording equipment was purchased by VLIR-UOS. - Challenges with the programme are that international project implementation causes the international partners to feel superior, not allowing the partnership to be equal. - Contextual significance needs to be acknowledged by management of VLIR-UOS when dealing with SA colleagues in Belgium.

	- Some have alleged that they have been asked to reimburse the programme after having attended what they claim to have been programme approved conferences. - PSU service access was difficult, costs related to field work were not fully catered for, even when there was a need to supplement some of the costs already catered for, or any additional field work costs were difficult to be catered for. - Local PSU office was the most challenging office to approach. - Project related costs, not catered for by the PSU would then be paid for by the Project 2 team members or other budgets. Structural challenges linked to lack of support from the PSU. - Research work is about going out to collect data which would culminate in a proposal which would bring in the finances. - Researchers are said to be allowed to own and lead projects. - Clear communication with management on how fieldwork is done, prior to the implementation of the project is necessary. - IR protocol approved locally and internationally, but when the researchers are doing a joint PhD and need to defend their studies, the Steering Committee that side would say that the population researched is not enough. This in some cases would not have been communicated in the beginning. These are students who are registered for joint PhDs, but only end up graduating at UL. At the same time, there was a thorough and lengthy process in deciding on this, with also the possibility to motivate choices. - Overall feeling of gratitude to VLIR-UOS for funding support from VLIR-UOS, finances on publications. - VLIR-UOS sometimes did not fully support some beneficiaries but paid for the field work. VLIR-UOS also had a support group for PhD students, which was effective in motivating the students. VLIR-UOS relieved students from stressing about paying for fees, it gave them an opportunity to fully focus on their studies. - VLIR-UOS financial support with transcription was beneficial. - Maybe VLIR-UOS may want to revisit the way that the funds were administered. Beneficiaries had difficulties accessing funds from the administrators, especially when data collection field workers had to be remunerated. - It was easy to get field workers, but difficult to pay them. Sometimes fieldworker's documentation would be submitted on time, but feedback from the administrative office would be late, only to find that the payment requisitions would be rejected. - Request for VLIR-UOS budget allocations to be a bit more flexible. - Administrative processes within the local VLIR-UOS PSU office were inefficient. The requisition processes were not clearly communicated. - Differences in perception at the South African side exist on some aspects of the cooperation that were felt as not (sufficiently) equal. If this was the case, it was not intentional, according to the Belgian counterpart. Differences in approach and thinking due to cultural differences may also be at the root of this.

	- Other challenges were linked to the condition of accommodation when in Belgium (although many efforts were done at the Belgian side to improve this aspect which was also recognized by the South African counterpart).
Final judgement/comments	
- Targets appear to be met and overachievement noted. - VLIR-UOS resources being used in the clinic. - General appreciation for VLIR-UOS that resulted in a huge programme expansion & importance especially during COVID-19. - DIMAMO surveillance is being used to contribute the national effort during COVID-19. - Concern about data collectors/field workers stipend vs salary. - Appreciation for VLIR-UOS scholarship and opportunities for learning & personal growth	

Sustainability	
4.1 Institutional Score: Good	- The VLIR-UOS project was to end in 2017. VLIR-UOS started with support to 8000 population members to 30 000, and after VLIR-UOS ended this moved to 100 000 population. - Succession plan: Developed its own research team on campus, mentoring students in healthcare sciences and psychology, capacitating people to supervise and do research.
4.2 Financial Score: Good	- Beneficiaries gave much acknowledgement to VLIR-UOS, which was a catalytic intervention, bringing to birth DIMAMO, which is now having a life of its own because of the project's ability to attract external funding. - Presentation on the work done with VLIR-UOS to the South African Population Infrastructure Network. Proposals were submitted and funding was received from SAPRIN, leading to the infrastructural development of the DIMAMO, which is fully funded by SAPRIN, all the equipment within the DIMAMO building is fully funded. - VLIR-UOS is the founding funder of the DIMAMO that led to additional funding. - Field workers from the VLIR-UOS programme are now in the DIMAMO project and are fully funded on a monthly basis. - The DIMAMO project now has over 40 people receiving salaries. - Have secured funding from NIH, in partnership with Wits and CPT, as well as Benasha funding for COVID -19 studies. There are four countries doing this - Uganda, Ethopia, Kenya and SA. - DIMAMO is currently fully funded & independent.

Final judgement/comments
• Project 2 is able to generate income thanks to the DIMAMO and the impact in the community • Project spin offs noted, this increased sustainability of the project beyond VLIR-UOS financement, • Leveraging funds for the community data collectors • Project 2 appears to have sufficient supervision capacity.

Impact	
5.1 academic level Score: Good	– Project 2 is facing a challenge of other departments not understanding the impact of activities linked to collecting data for research purposes, gaps between academic and community. – Scientific evidence to show the link between the programmes & data collection before & after. – MA's & PhD's considered to be of high quality due to additional courses, exchanges & networking with various institutions nationally & internationally.
5.2. Development Score: Excellent	- Impact has been high, resulting in improved health and wellness for community members. - DIMAMO population survey technology has had a high impact on community development in healthcare. - Level of patient care has improved. - Improvement in recording noted. - DIMAMO used during COVID-19 to survey COVID-19 cases & funded by government.
Final judgement/comments	
• The project has a high element of impact because the project was not only about data, but lifestyle change at community level. • The project initiatives transformed the lives of the people of Ga Dikgale in terms of their behaviour change. • The support groups functioning in the local clinics means very high and strong collaboration in the community. • The project exceeded expectations in terms of benefit. • There is a strong relationship, networking & collaboration element with the Project 1. • A good mix of approaches & involvement of community & collaboration across sectors.	

Comments related to project 2 that touch/are related to the overall programme

- Difficult to carry out field work, because of all the issues related to approving expense claims.
- There needed to be a better understanding of the need for fieldworkers as data collectors (budget management). This gives the perception that qualitative approaches are not valued & a lot of efforts were needed to jump through hoops to pay costs unlike colleagues in the sciences.
- There was a perceived impression that there was a bias between (financial) support of field work to quantitative vs. qualitative researchers, with public health researchers receiving more difficult financial support for field work than the researcher scientists doing research in laboratories.

2.3.3. Project 3

TITLE OF PROJECT: MULTIPLE LITERACIES

Introduction

Multiple Literacies improve teacher capacities in English & local language, sciences and health literacy.

Factual data

Hosting faculty	Faculty of Humanities
Number of staff in research group	7
Status of staff (fixed position, service contract, others)	Fixed positions
Number of PhD finished/ongoing (with VLIR-UOS funding)	4
Number of PhD finished/ongoing outside VLIR-UOS funding	6
MSc involved in the project	No information available
Number of publications in peer reviewed journals	30

Evaluation questions

Relevance	
1.1 Responds to needs Score: Excellent	- Deputy Project leaders confirmed that the VLIR-UOS programme was relevant because it links with national literacy objectives. - SA government drive to promote reading. Fostering a culture of reading, which is the Department of Basic Education's strategy, with the main goal being to improve the reading competence of learners. - The project has also been striving to take part in government's mission to increase graduations in tertiary institutions. - UL proximity to local villages; interest in promoting local languages, English & math & science literacy. - UL support in local communities' link to future students enrolled at UL. - University of Gent students provide service to local school learners and capacitate teachers in alternate teaching methods. - Project 3 reached out to a rural school in the poorest rural area of Limpopo, the primary school is called Dikwata Primary School. The school had approached UL for assistance with learners in different subjects since they were struggling.

	- The surrounding area of the school is filled with youth who are not attending tertiary education and the visibility of the UL VLIR-UOS programme students changed the mind set of many youth; the learners of Dikwata primary benefitted a lot from the project. - UL contributes to the education in the surrounding communities.
1.2 Synergy Score: Weak	- Collaboration with exchange students from Gent University is seen as valuable. - Multiple content books were donated in order to entice willingness to read, where learners would borrow the books, read and share experiences. - Some collaboration with Project 2 on health literacy. - The project worked with Public Health students who went and visited the homes of learners from Dikwata Primary school. - The project also worked with Project 1 on ICT initiatives aimed at improving administrative management at school. - Concerns raised include insufficient awareness & communication about the VLIR-UOS programme with staff & management at the Education Department. - There was little involvement of the Education Department, so cannot speak to achievements & successes on VLIR-UOS programme. - UL quarterly reports do not say much about the project. - Noted the difference in students & research done at Undergraduate level & that of UL research done at Postgraduate level, highlight need to develop culture of research. - Student planned to bring DoE & health professionals together but didn't materialize due to personal bereavement & later COVID-19 - Student direct contact with patients on treatment literacy
1.3 Coherence Score: Weak	- Project 3 facilitated the relationship between Belgium students and a primary school in the community in order to assist the school to receive Belgium methods of teaching learners. - The VLIR-UOS programme ensured that the school benefits from different and innovative ways of teaching school subjects like reading, maths and science. - Some Project 3 members are responsible for housing the project and provide a supportive role, as well as being accountable for all processes related to VLIR-UOS and the schools. - Education Department unable to provide information on health literacy in school/community.
Final judgement/comments	
• Importance of project noted for national development goals & UL priorities. • Appears that health and literacy did not have synergy & collaborative actions. • Project 3 Education Department & health literacy Department appear to be tacked on to project 3 on paper but in practice operating independently from each other without interaction. • Lack of communication; there were no intermediate levels of communication with the Heads of Departments which could have played a bigger role in ensuring that the project is visible.	

Effectiveness	
2.1 Academic Score: good	- Some VLIR-UOS students now have Master's and PhD qualifications, some are lecturers at UNISA, others are employed by Government Departments (Education). - Project 3 PhD students sponsored by VLIR-UOS, also become staff members at the university. - Some PhD students also became school principals. - Master students are continuously encouraged by UL supervisors to do PhD in science literacies funded by VLIR-UOS. - VLIR-UOS developed training workshops for educators. - Students not having had any national or international travel experience were given an opportunity to travel and be exposed to advanced skills. - Different methods of teaching at school, was learnt from exchange students & now these methods are being used. - Appreciated all fees paid – financial support, national & international conferences, helped to write chapters & present at conferences. - Appreciated a professor from Belgium who participated in guiding the educators as they were doing their presentations at the VLIR-UOS workshops. - The initiator of the VLIR-UOS Project 3 left to go to Wits, Professor joined in second phase. - ICT built capacity on how to use computers, download books, share folders, books on devices & phones. - Better capacity on internet, to access information.
2.2 Development Score: **Good**	- VLIR-UOS donated 14000 books and an additional 24000 language books were donated to schools. - Bags and books were donated to schools. - Reading clubs established in schools. - All the books donated above mentioned VLIR-UOS initiatives motivated learners to read. - The books distributed across Limpopo were more than 50 000 booklets developed by the educators. - Exchange students from Belgium helped in distributing books at school, some would volunteer to teach learners on how to read. - There were workshops for educators from local schools on how to teach physical science. - There were donations of bags from Belgium, filled with books and games inside, some books were accessed electronically. - The exchange students from Belgium came to the Dikwata primary school and shared literacy knowledge from Belgium with learners and teachers. - The Belgium teaching aids improved the level of teaching and learner performance.

	- A science teacher from Dikwata Primary school was very pleased that VLIR-UOS offered him an opportunity to attend a workshop on the Plant Kingdom and the Solar system, he also was able to visit the VLIR-UOS science lab. - The science teacher benefitted from sharing experiences with other teachers from different schools. - The project also allowed the learners to be taught about the solar system. - Educator development initiatives should be done quarterly, the initiative did not involve all the circuit schools, it only impacted 7 schools. - Research in the high schools and the primary schools on the understanding of a balanced diet, their attitude towards it. - The VLIR-UOS programme motivated teachers from Dikwata Primary school to study further and do degrees in teaching. - The view expressed is that the developmental outcome is far better than the academic one. - Belgium students put much effort on improving methods of teaching science in schools, and learner results available at circuit are proof that pass rates were improved. - Suggestion that there should be interactions from Belgium high school students with local high school learners, benchmarking at high school level for sharing of experiences would be highly effective. - Rural schools do not have computers, libraries and other resources. - Student part workshops & conferences presenting & raising awareness on health literacy to be included in teaching curriculum in life orientation e.g. wash hands before eating (prior to COVID-19), how to take medication correctly. - Student involved in running workshops at UL for teachers on visual literacy, multi-model teaching. - Impact is on interacting with teachers helped to write a story book & good teacher training. - Some learners only get to experience libraries and labs. This affects academic development from high school level and university level, difficulty in transition due to lack of exposure to resources.
2.3 Scientific quality Score: Good	- VLIR-UOS has empowered academics and produced professionals. - Teaching aids developed for educators. - 30 articles in peer review accredited journals. - Did impact study on learners & educators. Empowered on how to collect data and improve research assistance.
Final judgement/comments	
• There are positive testimonies related to the impact of the project and good community engagement, benefit & impact in literacy and maths/science. • The schools appreciated the work of the students. • The school children were responsive to English language & literacy project with the Belgian educators & this had a positive impact on the learners, school & teachers.	

• Project 3 activities were not as visible as they should have been. Successes were not built upon neither upscaled.

Efficiency	
3.1 Intermediate results Score: good	- Students attended & presented with the Department of Education & Nursing dept. at SAERA (South African Education Research Association); conferences funded by VLIR-UOS on health literacies, they expected them to teach learners and patients. - Private companies came on board to distribute over 30 000 uniforms at the school. - Partnership with NGO's on literacy. - The learners of the school enjoy reading now. The learners are now very good at Maths and participate in math quizzes. - The very presence of the Belgium students excited the learners and encouraged them to want to learn and impress them. - The kids were immediately able to understand and communicate in English when taught by the Belgium students. - Impact on how teachers teach literacy reading & writing improved - Now able to enter spelling bee competitions. - Interaction between students in Belgium and South Africa should be established and maintained. - International students who are first- or second-year students come for exchange programmes, do research work and report back in Belgium. It would be good for SA students to see this & learn from them. - There is no interaction with SA students or for them to go to Belgium as part of the exchange programme. - The Belgians go directly to the school without interacting with SA students. - International collaboration was bad, the only person connected to the project (was Professor Valke). - Some of the international project team members are not known by the local Project 3 members.
3.2 Relationship input-output Score: Good	- PhD students are given opportunities to go to writing retreats organised by the university. - Academics have been capacitated through article writing skills which have been improved. - There were effective supervision workshops for academics, and they are now able to supervise PhD students, PL now supervising 2 PhD students who are just about to graduate. - The project has produced a number of Master's graduates and PhD graduates. - 4 PhD students graduating this year. - 30 Accredited journals have been published. - Publications were fewer, and PhD graduates were not more than 10. - Belgium scholarship has resulted in graduations and employment by UL.

	- Lecturing at nursing college but after PhD no promotion or benefits except personal growth, improved presentation skills, confidence & international experience & recognition - The VLIR-UOS also allows academics to interact with international academics and professionals. - Beneficiaries are now supervising Postgraduate students. - Belgium supervision support was vital for the project. - VLIR-UOS programme allowed a rural school an opportunity to upgrade its teaching methods. The relationship between the school and the project resulted in the school qualify to compete with other schools on reading and literacy. - The school established a partnership with an NPO called Barongwe, and this partnership resulted in the school acquiring a donation of school uniforms for the learners.
3.3 Project management Score: Weak	- Easy access for processing or purchase request forms. - VLIR-UOS's management of funds was better than the university's financial systems and processes. - Accessing funding for Project 3 PhD students was easy. - The budget was not enough to cater for all the activities involved in Project 3. Project 3 was the least funded. - Perception that VLIR-UOS driving Natural Science and Natural Sciences seem to have preference, that's why Project 3 budget allocation was low. - Feeling that education was not as important but the other project cannot compare with community engagement. - Numbers of graduates & publications cannot be compared to other projects. - Challenge - did not have committed team/staff members. - Unable to upscale project to reach more schools only touched a few schools. - Communication weakness, lack of information sharing – share blame, invite Department to workshops, not all attended or left early. - Sometime not updated on day-to-day information, when Belgians coming & forget to invite them. - Didn't know VLIR-UOS funding coming to an end found out 2 weeks ago, planned to apply & continue with VLIR-UOS for PhD & PostDoc
Final judgement/comments	
• Head of Department (Educaction) was not aware of what the project was about • There appeared to be a lack of communication & awareness of the project at intermediate level (Dean/Head of Department, management level) within the Education Department's limited achievements of the programme. This may be as a result of HoD joining the Department in the middle of phase 2, and also because of difficult overall cooperation with the project leadership & the Department. • It seemed that capacity, energy and motivation was lacking in project 3 team (education).	

- The perception at project level exists that Project 3 was not prioritised by the programme and that it received less funds compared to the other projects. However this seems to have been logical because in the light of the activities undertaken.

Sustainability	
4.1 Institutional Score: Weak	- The project can continue with educators from local schools. - There still needs to be collaboration between the University and the Department of Education. - Ending of VLIR-UOS programme shakes the sustainability of the project. - Without the programme, it would not be that active. - Project 3 may not continue in the same way without VLIR-UOS-UOS - Joining up with Project 2 team members on mental health may help sustain the project in some way. - Project team members would come to workshops for teachers but not stay for the duration of the workshop. - Research should be a requirement for first year university students in the university of Limpopo, it will help with sustaining projects of this nature.
4.2 Financial Score: Weak	- The institution will take over Project 3 as students are required to be placed at local schools and this is in the Department budget but with limited funding.
Final judgement/comments	
• The project does not appear to have undertaken any initiatives to raise funds. • The project continues with Department funds but with limited reach. • It is unlikely that Project 3 can continue as during the programme period or be upscaled. • Upscaling and sustainability will be a challenge, a few schools have been impacted; a whole lot more schools could have benefited from this project. • Students are unsure about where to get scholarships to continue with PhD & Post Doc (the ones not graduated yet).	

Impact	
5.1 academic level Score: good	- Teachers & principals are interested in studying further, to get a degree (many have diplomas). - School principal completed MA at UL. - Teacher got PhD & was absorbed by UL as lecturer. - Staff member completed PhD. - PhD Postgraduate student engaged as lecturer. - International exposure helped to present & write chapters.
5.2. Development Score: good	- Teachers benefited through the educator training workshops, resulting in positive impact on learners, attended workshops at UL on the plant kingdom, the solar system, drawing skills, acids & bases & saw a lab – helped with teaching. - The learners & school results have improved - these results are available from the circuit managers of schools.

	- Belgian student made a huge difference at the school, some teachers have adopted these methods as observed by the principal. - School participating in local competitions and doing better at reading & math. - Now there is interest in reading – at school assembly once per week a learner reads a small text from any book.
Final judgement/comments:	
• The exchange with the Belgian counterpart could be pursued independently of VLIR-UOS, unfortunately there doesn't seem to be much interaction with Gent University & the project team, to continue with this exchange.	

Comments that touch/are related to the overall programme

- Overall appreciation for VLIR-UOS scholarships, making research available, data, sample collections, training, conferences, analysis, exposure, guidance, supervision and so on. Any would not have been able to do post grad without VLIR-UOS programme.
- Most expressed wish was that VLIR-UOS could continue to enable ending pending studies (for instance up to 5 years).

2.3.4. Project 4

TITLE OF PROJECT: LABORATORY SCIENCE AND PUBLIC HEALTH MANAGEMENT OF SEXUALLY TRANSMITTED DISEASES.

Introduction

Laboratory science screens & uses various sampling methods for STIs. The focus is on public health management, prevention and treatment of high-risk groups. Since COVID-19 the laboratory has be used for COVID-19 testing.

Factual data

Hosting faculty	Faculty of Medicine & Public Health
Number of staff in research group	4 Core + 7 other members
Status of staff (fixed position, service contract, others)	All permanent
Number of PhD finished/ongoing (with VLIR-UOS funding)	6 & 5 from Phase1
Number of PhD finished/ongoing outside VLIR-UOS funding	3
MSc involved in the project	16
Number of publications in peer reviewed journals	44 10 local journals 7 international journals 27 conference proceedings 5 still under review Total: 49 (23/2/21)

Evaluation questions

Relevance	
1.1 Responds to needs Score: Excellent	- Project 1 is central to all projects in relation to statistical input. In the past SMU had been weak in this area, but collaborations with Project 1 have bridged that gap. - Relevance of the VLIR-UOS programme can be judged at two levels, community impact and the level of research work done by the institution, and the programme has been successful at both levels. - The quality of research work done with local healthcare clinics, has had high impact on local communities. - Project 4 initiated a study on Men-2-Men (MSM) sexual activities and empowered community members on the subject. - Communities are appreciative of the knowledge on MSM, and this study is contributing immensely to reduced STI infections thus responding to the national objective (reducing HIV).

	- The lab is now one of the sites for HIV Trials Network. HIV is a major health problem in SA. - High level of impact in the local community healthcare clinics or facilities, and data collected in engaging with these structures became highly valuable for research purposes. - The STI agenda is highly relevant within the University's context in relation to student testing and STI education. The relevance and effectiveness of the STI project outputs with regards to local communities is unquestionable - Covid19 research activities are currently being done in the VLIR-UOS lab. - The VLIR-UOS support also expanded onto a capacity building initiative for Community Care Workers. - The project has also supported collaborations with clinicians on studying the effects of COVID-19 effects and how it has exacerbated access to medical care. - VLIR-UOS also supported an initiative looking at social aspects of HIV infections, which were activities conducted through population health research. This initiative resulted in partnerships leading the project to venture into research studies on orphaned and vulnerable children in relation to HIV infections. - Without VLIR-UOS MeCRU would not able to do MSM work, this opened doors for the project
1.2 Synergy Score: Excellent	- The MSM project has also created synergies between departments and will produce a further 3 PhD's. The initiative has brought more departments together. - Schools of Medicine, Nursing, Clinicians are now doing PhD's because of the opportunities and platform created by VLIR-UOS programme. - Synergies with MeCRU in conducting clinical trials during implementation of the MSM project assisted a lot. - Synergy when moving and placing people engaging in interdisciplinary research and community action. - Collaboration with the Sub-Saharan countries on research was instrumental. - Project-to-project communications systems in place, much needed when analyzing data, especially since SMU has a weakness in statistical inputs, and this was well bridged by Project 1 data management. This data was also needed when it came to training activities. - The HIV Trials Network is currently utilizing the VLIR-UOS Lab for trials. - Research protocols developed by the VLIR-UOS research activities became vital for MeCRU. - As the VLIR-UOS programme is strong on encouraging collaborations, other departments now know that inter-disciplinary research partnerships is possible. - Collaboration with Project 1, in Phase 2 was highly instrumental.

	- Interdisciplinary collaborations allowed for good communication needed when analyzing data. - Collaboration with NIH project & Belgium is still continuing.
1.3 Coherence Score: Excellent	- The VLIR-UOS programme also allowed for collection of data from Community Care Workers for quality research purposes, by providing financial support needed. - The project offered students an opportunity to attend international workshops, therefore acquiring quality skill. - Multidisciplinary team - each play vital role in MeCRU & MSM - Clear links between various departments, sampling testing and community outreach.
Final judgement/comments	
• There is clear relevance in relation to the achievement of objectives, there is coherence, synergies and ownership at the university level. • The project carries a strong element of community engagement. • There is clear collaboration, interdepartmental and multi-disciplinary partnerships which will continue beyond VLIR-UOS. • The fact that VLIR-UOS equipment is currently being used for Covid testing and HIV testing indicates clearly that the project is responding adequately to National Development Goals. • The academic quality has been improved through a number of PhD's and publications, and this has contributed to an improved reputation of the university. • Significant research (TB) and protocols important for the community and country noted.	

Effectiveness	
2.1 Academic Score: Good	- In Phase 1, the goal was to produce more Medical PhD graduates, now there are a number of doctors doing their PhD's. - The VLIR-UOS programme created strong awareness on PhD's, so much that even the Head of Dermatology is now doing PhD. - The MSM project is a flagship project done through massive collaborations with other departments, including the School of Medicine, which is now training Postgraduates through the VLIR-UOS programme. - The VLIR-UOS programme allowed for more women to be involved, linking the programme to the National Development goals (accidental not targeted). - VLIR-UOS had a very strong element of capacity building in phase 1, the programme invited and funded anyone who wanted to do research. - VLIR-UOS effectively created awareness on PhD's, thus bringing academic development enthusiasm and motivation in the institution. - Head of Dermatology department is now doing PhD because of the VLIR-UOS programme. - Unity now exists between different departments and team members. - Initially there was Project 7 Public Health and Project 8 Infectious Diseases, but there was a merger into Project 4, infectious diseases

	but this did not affect the positive way that all team members have been working well together. - Departments now understand each other's strengths, resulting in research into different areas, which is a spin off. Now people know that interdisciplinary collaboration is possible. - VLIR-UOS allowed for beneficiaries to do what the institution refers to as "sandwich PhDs", which involves national and international qualification. - Medicine students now doing PhD's, and the school of Public Health has also begun training Postgraduates because of the VLIR-UOS programme. - Communities highly appreciate the STI awareness activities which have contributed towards reduction of HIV infections and the project's response to the National objective. - Public Health Digitalization through the VLIR-UOS lab allows for communities to come through from the field research activities and have their samples taken and tested from the lab. Clinical trials are conducted in partnership with MeCRU. - Joint PhD's resulting in new projects like the TB diagnostic research activities which have secured funding. - VLIR-UOS project participation in establishing research studies on cancer diagnosis has been highly instrumental in the country's objectives with regards to the disease. - The Belgium standards on PhD graduations have created leverage for SMU's reputation of creating quality PhD's, thus high demand for local research partnerships. - Manuscripts are published, others are in the pipeline, with a wealth of data collected on the MSM project, which still needs to be published. - In Phase 1, one of the objectives was to produce PhD's from the medical field, the goal was reached, as there are now increased numbers of doctors who are registered Pathologists with PhD's. - UL and SMU de-merger experience affected some PhD students negatively, lacked supervision, and for some, allocation of new supervisors was needed, which proved to be a long and stressful process for the beneficiaries. - VLIR-UOS also supported the initiative to ensure quality of service in primary healthcare patients by fully funding research study and publication of diagnostic protocols on the early diagnosis at primary level, which was a study targeting under-resourced communities. This support resulted in a proposal. The beneficiary went on to become Head of Department and collaborates with the VLIR-UOS HPV research activities. - An increase in reputation as a research site, enhanced the image & adds value to work. - Increase in number of people doing research & in doing so improves our skills.

	- Twinning with universities added value to individuals, wish this could continue & do more of this. - High staff turn-over & not enough supervisors
2.2 Development Score: **Excellent**	- Major MSM spin off in terms of Public Health - Excellent community outreach especially to minority groups - MeCru attracted public funding - Contributing to combined effort on Covid-19
2.3 Scientific quality Score: Good	- Quality of STI research and findings by the VLIR-UOS programme has challenged the Department of Health to rethink its strategies on cost effective scientific procedures. Due to this factor, there is now an established relationship with the VLIR-UOS programme this has created room for collaboration where the VLIR-UOS lab may be able to utilize data from the surveillance data collected but not published by the department yet. - Sample screening machinery from the VLIR-UOS programme is now being used for national screening, and also used by other institutional departments for their own screening. - The programme also enabled beneficiaries to train in Epidemiology Biostatistics and Qualitative Research, and these opportunities allow for these graduates to be absorbed by their institutions as employees, in this way the project is able to direct research modules in the right direction. - The TB research study on pediatric TB is superior to the BCG vaccination directly from the research. - HPV assist with oncology capacity to get specimen, sequencing and funding together due to collaboration & be more aware of other research being done.

Final judgement/comments

- Opportunities created by the VLIR-UOS project, allowing students to travel back and forth internationally to get access to resources and acquire the needed experience and academic development has had unquestionable impact on the individual's level of confidence.
- Collaborations with the WAKA (JOINT) project has many gains for the local students and has motivated them to do their PhD's and become academics.
- The effects of the de-merger were negative in relation to supervision procedures, not only causing delayed PhD graduations but discouragement and despair. However, the positive effect is that the VLIR-UOS programme intervened and the beneficiaries of the VLIR-UOS programme now want to graduate with their PhD's and make sure that they become supervisors so that others do not experience what they went through.
- The programme needs to train and groom more supervisors, hold regular meetings with project team members in order to learn from each other's experiences, transfer of skills, bridge the gap when supervisors leave the programme for greener pastures.
- Solid local supervision needs to be established more.
- More continuation of inter-disciplinary links is needed.
- Excellent contribution to research on paediatric TB.
- Increased numbers of PhD's.

• More women than men noted, incidentally not part of a targeted gender plan (and often in a carer role, not in senior leadership positions).

Efficiency	
3.1 Intermediate results Score: good	- Capacity Building element was much stronger in Phase 1. - Joint PhD graduates now supervising other students doing joint PhD's, whilst also encouraging them to aim at becoming supervisors (strong train-the-trainer component of the VLIR-UOS project). - The orphaned and vulnerable groups have become the important part of the research process through the VLIR-UOS project. - One of the VLIR-UOS beneficiaries, now with a joint PhD, is currently involved in the WAKA programme and has been participating in training SADC country students. - The establishment of inter-continental collaborations which are having a high impact on HPV testing. The VLIR-UOS project has further assisted the local beneficiaries to work with PhD students from Ethiopia and help them establish their own local labs. - Relationship with VLIR-UOS exposed researchers, taught & learnt skills & knowledge that they would not have known, like the use of Mandalay & soft skills e.g. "attitudinal" skills, learnt to see where to press buttons to be effective. - School of Medicine has more women doing PhD's, even the current Head of Department is a woman. - A Microbiology PhD student supported by the VLIR-UOS programme, doing TB research, is one of the flagship projects since the study resulted in a publication by Lancet, beneficiary now setting up TB research lab. - Since there are funds allocated to publications, students are encouraged to do scientific research for publication purposes in order to contribute to the institution's knowledge base. - Important collaborations of different departments in laboratory & training centers. - Public Health Science should be reflected in the reporting process. - This intermediate level in the project leadership is missing & could do better in this. - Project leaders through Deans could publicise more in Public Health School & link with liaison person more – improve engagement within Department, with the right people & better communication.
3.2 Relationship input-output Score: Good	- Collaborations with Belgium on research studies has established a good foundation for local projects initiated through the VLIR-UOS programme. - Other external partnership requests are coming through to SMU because of the quality of research work, produced through the programme. - The Science and Public Health collaboration is highly relevant when looking at issues contributing to the Healthcare in the country. VLIR-

	UOS supported research projects address these factors, therefore they are being responsive to context. - Making use of the NRF funded students in training other students allowed the VLIR-UOS project's funding to be effectively allocated towards the laboratory. - Lab being used by various departments including external requests. - Currently converted for Covid-19 testing.
3.3 Project management Score: Good	- The Project Support Unit set up for the VLIR-UOS project was very efficient, there were no stressful processes in accessing compliant funding requests. All financial reports were fully transparent. High levels of financial accountability within the project. - Proper budget oversight. - There was flexibility within budget for justifiable reallocation of funds. - Concerns about Public Health work & work done by field workers, being undervalued. - Issue of paying fieldworkers versus VLIR-UOS not funding salaries for field workers had to be motivated over and over. - More involvement and working with Deans would help at management level and marketed the VLIR-UOS programme, introduce it at this intermediate level. - Two pieces of laboratory equipment are not running or being used optimally. One of these is very expensive to maintain - of 16 functions, it is being used for only one function & consumables are expensive and can't be kept for long as they expire. Would prefer to sell it & purchase other local piece of equipment that is needed for regular use. The second piece of equipment is being used by various departments; however, there has been no training on this software, as it is not available in SA. It therefore cannot be used to its fully capacity.

Final judgement/comments

- Recognition for good quality lab facilities and being used by SMU, government and others.
- It would have been better to analyze more thoroughly in advance lab equipment to be purchased in terms of usability, post purchase costs and overall long-term efficiency.
- General sense of good project management and ease in accessing funds.
- There has remained a constant tension, concerning the lack of understanding around paying of costs (data collectors) versus the importance of collecting samples/data in community.
- The payment of consumables by VLIR-UOS was appreciated which meant that students not funded by VLIR-UOS could also access this.
- Direct support for Public Health & direct beneficiaries from VLIR-UOS was limited, but through VLIR-UOS it was possible to access public funding. This couldn't have been done without VLIR-UOS.
- More intermediate level of management/Dean & involvement would have helped in creating awareness and marketing of VLIR-UOS programme.

Sustainability	
4.1 Institutional Score: Good	- PhD students currently funded by VLIR-UOS programme have been able to secure other funds, post VLIR-UOS. TB research study has now secured funding from NIH, and it's a product of the VLIR-UOS project. Two graduates with sandwich PhD's continue with Belgium and SADC collaborations. - For the purposes of academic and institutional sustainability, SMU shall continue to seek funding for PhD students in order to attract further funding. - NRF and institutional funding will also sustain the project. Continued collaborations with MeCRU will sustain the project. - Interdisciplinary collaborations have created room for a sustainable joint fundraising strategy. - Releasing more publications is expected to attract more funding. - With the University now coming on board with the Post-Doctoral Fellows, hopefully they can assist with the output of collected data. - Engagements between the project leader in the North and with the University may result commitments to continue collaboration and further assisting with supervision will help sustain the project. - Plans to make use of the lab for income generation are underway, but for now plans are on hold because of the COVID-19 pandemic. (lab used for COVID-19 testing) - Funding from the National Health Lab Services, for COVID-19 testing is currently helping sustain the project and has created a platform for SMU to showcase its lab facility & state-of-the-art equipment functionality as well as its strong research capacity. - SMU's initiatives for the Post Doctorate Fellowship will have a positive impact on the programme/university. - Further local collaborations with Universities like the University of Pretoria, UKZN, UCT, Wits have had positive impact, ensuring project sustainability when it comes to possible joint funding proposals that may be submitted. - Project leader in the North is now encouraged to start a PhD project in the South which will result in academic relationship sustainability beyond VLIR-UOS programme. - VLIR-UOS to be continuously acknowledged as a sponsor in all publications. - Continuous enrollment of students will ensure sustainability. - Partnership with Department of Health in publishing surveillance data will surely sustain the project. - Collaboration with USA Biostatistician on TB diagnosis will ensure sustainable international links which have numerous funding and academic collaboration possibilities; 2 supervisors left so delayed completion. - Not much support from SA supervisors, got more from Belgium supervisor.

	- One supervisor would find themselves supervising too many students at the same time, this caused a burn-out by having to teach, do research, supervise & even run own diagnostics. - Succession plan is to train PhD students to become supervisors, so that if a supervisor leaves, the remaining supervisors would be able to take over. - Need network of alumni to meet and postdoc
4.2 Financial Score: Good	- The VLIR-UOS financial management experience has encouraged the institution to set up financial allocation strategies for future spending. - NIH, NRF and institutional funds secured will sustain the project. - Research work done and the well-resourced lab has attracted funding and increased the status of the project to attract funding. - The number publications produced will culminate in income generation.
Final judgement/comments	
• Supervision of PhD students was and is a challenge and a succession plan should form part of the sustainability plan. Concern about over-reliance on 2 supervisors to do supervision and who already express concerns of burn-out. Therefore, a clear strategy/plan for building capacity of supervisors is needed. • There exists a plan to create and implement an alumni network & Post-Doctoral Fellowships. • It remains a challenge to retain staff as staff & students opt for larger cities or better paid jobs. • The project was able to attract funding due to visibility & reputation in research and laboratory, from government, institutions and pharmaceuticals. • Ability to generate income through publications. • The project is considered to be sustainable.	

Impact	
5.1 academic level Score: good	- Dentistry student currently doing HPV testing in Oral Medicine and has now enrolled with the VLIR-UOS programme to finalize a PhD. - Joint PhD allows the students to be fully skilled and responsible for their own publications. - Groundbreaking pediatric research on TB, now trying out a vaccination superior to BCG with newborn children. - TB guideline published by The Lancet. - High quality laboratory facility.
5.2. Development Score: Good	- Some of the Honors students, even though not funded by VLIR-UOS, have become secondary beneficiaries of the programme, because of the supervisors produced by the programme. Interdisciplinary collaborations have positively improved academic excellence. - Reach minority groups through snowballing effect. - Impact through ability to access minority groups such sex workers, MSM to reduce STIs and HIV.

	- Fully functioning laboratory facility being used for STI, HPV, HIV & now Covid-19 testing.
Final judgement/comments	
• Clear impact at both academic and development level. Therefore, the project has gained recognition. There are requests for assistance, collaborations and access to funding is possible. • Surrounding communities are greatly benefiting from lab services including minority groups. • Impact has been extended to other services and activities related to TB, STI etc.	

2.3.5. Project 5

TITLE OF PROJECT: ASSESSING THE IMPACT OF LAND USE ON FUNCTIONS OF THE LIMPOPO AND OLIPHANT'S RIVER SYSTEMS

Introduction

The project does water research and training programmes in the major river systems in the Limpopo, to assess the impact of water (pollution & fish contamination) on health, land use and ecosystems.

Factual data

Hosting faculty	Science and Agriculture
Number of staff in research group	7
Status of staff (fixed position, service contract, others)	6 permanent and 1 contract
Number of PhD finished/ongoing (with VLIR-UOS funding)	3
Number of PhD finished/ongoing outside VLIR-UOS funding	2
MSc involved in the project	9
Number of publications in peer reviewed journals	35

Evaluation questions

Relevance	
1.1 Responds to needs Score: Excellent	- Looking at the national objectives of the country, protecting water source & environment. - Focus on natural resources and use.

	- Regional importance as water is very scarce, Limpopo receives less than 5 % of rainfall, therefore the project fitted in well with national development objectives of protecting national resources. - UL objectives aims to look at developing local context, the Oliphant's river was the first project in the first phase. In the second phase the project expanded to include the Limpopo river & Letaba. - The rivers have impact on neighbouring countries, of regional importance. - Relates to livelihoods, food security & health. - Significance is global on climate change and water.
1.2 Synergy Score: **Good**	- Collaboration between Project 5 and the Project 1 is positive & necessary for the research. - Project 5 is able to assist the food security project with regard to water findings. - Linking with Project 1 & Project 6 on small projects such as ecosystems, land use projects, water & fish pollution (may result in attracting funding). - Project 1 assists with mapping. - The Project is now part of the Oliphant River Forum. - The Project worked with the Water Research Commission, which resulted in a Policy Brief.
1.3 Coherence Score: Weak	- There is not necessarily direct community engagement. - Since the river is a source of food for the community, when the results are found, the project gathers community members, government members, other stakeholders, and the results are shared with them. - Information is sometimes shared through workshops, policy briefings and sending information to the relevant Government Department. - Samples are taken at riverside and when people are fishing there, there scientist take time to inform them about the findings on the water. - This engagement with the community is informative, even though it may not be formal. - The concern is that presentation of this type of research findings maybe be unpopular to mining companies and fear of causing job losses as mining creates jobs
Final judgement/comments	
• The relevance of the work done by this project is vital to health, livelihoods, food security etc. The importance of this water project for the individual, province, National & Region is clear. • There is also global relevance in terms of climate/environment. • The issue of the water pollution, in rivers and business activities happening around the rivers are affecting the communities so much and this is highlighted in the research findings. • The findings are therefore linking the research work, to economic, social and environmental issues that the project is not equipped to handle. • For this type of research work, it seems that more collaboration was essential and needed in seeing the findings & outcomes making tangible impact. • The research findings needed to be broadcasted and translated more into action. • A lot is linked to this project such as politics, business, community and health. • It seemed not be enough to hand over findings to the Department as this was not be taken forward. Collaboration with local & national NGO's dealing with the environment, climate	

	change & food security/livelihoods could have been considered since these organisations were and are in a better position to take this forward, using the research results in advocacy & lobbying work.

Effectiveness	
2.1 Academic Score: excellent	- The VLIR-UOS helped Project 5 to be established as a research group, it's a support team, developing youngsters who will be replacing current management. - The stronger the project group, the better for the leaders, therefore the project can be highly competent. - Students are now co-supervising students. - Students have been able to gain good expertise during the programme, it has developed people and individual scientists' skill level is high. This is to a level of the project developing an agreement contract that the students would not leave the institution for a certain period of time. - The students went to the summer school and were taught how to fix parasites. - The VLIR-UOS benefited other students who were not directly funded by VLIR-UOS but received support from the VLIR-UOS programme activities - about 5 of the PhD students. - These PhD students are part of the VLIR-UOS group, because they now also have a connection with the international partners. - Research results included in the curriculum.
2.2 Development Score: Weak	- Implementing the research findings is very difficult, all results are sent to Government and water authorities, they are up to date with what is happening with the water in the mining and the rivers, pollution issues are clearly stated in the findings, but nothing happens after all that data has been presented to them. - Some people give feedback to the project, they testify that after having been informed about the status of their rivers, they use the advice they are getting from the researchers, thus making a difference in their livelihoods (eat less fish because of the metals found etc.). - When samples being collected in the rivers, community members interested in and ask about what they are doing, about water quality & researchers give them information. - Findings sent to individual community members that are interested in the findings.
2.3 Scientific quality Score: Good	- The project did human health risk assessment between water and fish - There was a study on organochlorine pesticides harmful to humans, basically evaluating the concentrations that are affecting the water. - Students expressed their opinion that if molecule sequencing is done locally, it will enable effective scientific collaboration. - The students being poached are now making a difference in the country because of the quality of academic skill acquired whilst being part of the VLIR-UOS project.

	- Received NRF SARCHI chair because of publication helped to build up good NRF rating and reputation of Department & UL

Final judgement/comments

- Even though community engagement was not a direct objective, the effects of the work done by the scientists when they educate the community about the use of water was relevant and important. More community engagement meant more impact.
- The project appears to have an effective succession plan, the main aim of the team members is to make sure that the work they have started can continue. Now that there are people capacitated, there will be someone to take over when the leaders are gone. It was mentioned that the University will continue to stress the need to protect the environment, especially the freshwater ecosystem in the Limpopo province in any platform the University finds relevant. Wherever possible, the University will continue to work with the relevant non-governmental organizations (NGOs) to fight for the protection of the freshwater ecosystems.
- The project did well with the research. Results were included in the curriculum.
- The project produced quality students, and the target to produce 4 PhD's was reached and it was done effectively.
- The project is recognized nationally as producing good students and they are made offers to go elsewhere. The academic quality is recognised.

Efficiency	
3.1 Intermediate results Score: good	- 4 PhD's & 9 Masters & last PhD defended in Belgium in December 2020. - 5 PhD's did not receive VLIR-UOS scholarship but benefited from the project's infrastructure and mutual exchanges with other students. - Field work seasonal – rotate this as it is easier in a group. - Only one technician to help students with work, so now also doing technician work. - Staff shortage – lab manager & lab technician means that lecturers are over-burdened as teaching load is already very high. - No positions available to keep PhD students but absorbed 3 PhDs students. - Students quickly snapped up by other universities – feel like failing when students leave. - MSC quality on par with other universities, put in a lot of effort then leave. - MSC students working in Government & NGOs – 1 in charge of Waterberg area in Government position, another in River Health Project in the North West. - Type of research & testing done is expensive, through VLIR-UOS able to send samples to other labs, very helpful. - Got training on apparatus in the lab, but for accreditation to "trust" results, send it away. - They are making a big contribution in the development of the country. - The students who leave, move to other provinces and start up projects that are relevant to what they were learning from UL through the VLIR-UOS programme, therefore allowing VLIR-UOS's impact to expand into the rest of the country. - Exceeded output in publications, met the target, and five more were added.

	- All the publications done was during the VLIR-UOS programme & the data used came from VLIR-UOS – thankful to VLIR-UOS for these benefits. - Appreciation for VLIR-UOR scholarship. This has prevented some students to quit and find employment; without VLIR-UOS these students would not have done postgrad studies. - VLIR-UOS helped ensured personal welfare taken care of and this was a stress reliever. - Students are now co-supervising students along with their supervisors. - An MA student is an intern at the Zoological Gardens which end soon but not too optimistic about finding a job during COVID-19. Considering doing PhD but not at UL, want another environment not rural. - MA student absorbed to become lecturer at UL
3.2 Relationship input-output Score: Good	- Not enough support for Project 5 from the Belgians, a number of people on the list of Northern counterparts, but not enough output interaction from them. - Prof. Bervoets very helpful, came to fetch student from the airport. The professor was helpful in orientating the students coming into the country for the first time. - Some students had to learn how to ride a bike and took classes on this. - The experience was Belgians were not sociable, coming into the workplace just to work, no time to socialize. People walk pass you as if you are a piece of furniture - During work if you wanted to consult someone on an immediate problem, you would be stopped if you did not schedule a consultation. - Students felt lonely, few people spoke English, so ensured that one stayed close to the university because communication was worst further away. - Learnt statistics in Belgium, Antwerp university. - Learnt more on morphology, able to identify species & able to extract own samples. - Attended summer school in Prague through VLIR-UOS. - Through international collaboration (Czech University) strengthened work, improved status, exposure & increased global relevance. - Receive full scholarship for fees, accommodation, meals, pocket money, field trip, everything covered. - VLIR-UOS scholarship came to end in final year while still busy with research, would like VLIR-UOS to have continued funding until completed as research was necessary over 3 years sample collection between winter & summer. - Was able to use some funds from VLIR-UOS scholarship that was saved to pay for third year. - Collaboration with Project 1 for GIS (statistical and satellite) was useful. However, the project wanted to do more, but time did not allow, because the project funding from VLIR-UOS was ending. - The project wanted to do more work in other rivers. One student is assigned to one river, GIS assisted through VLIR-UOS but funding was ending, so could not take another student on for another river as there was no funding.

	- Project 1 may now have money to fund GIS, so they may be able to assist Project 5 with GIS. - Most of the students are from Limpopo, and they want to move to the city and others take better opportunities. - Some of the MSC students are working for Government and running NGOs. - Have enough PhDs to supervise Master's but field work is a challenge. - Fieldwork has been made easier when working in a group, so the visits were rotated making the output on research work done, more effective. - Planning take a lot of time for field work. - Initially, it was difficult to get funding for Masters and PhD students for this work, but VLIR-UOS came through with funding, previously research output was low.
3.3 Project management Score: Excellent	- In Phase 1, when funds were based in MEDUNSA, financial processes were stressful. Project leader raised the concern about this, and the finances were improved in Phase 2. - Most of the Project 5 money went into analysis. Sometimes purchase requests were declined if the requests were late. - The local team (PSU) was very helpful with processing of all the financial requests. They provided good support. - They were also strict when the reports were submitted. - There is a particular person in the North PSU (Ian) who was extremely good, assisted with reports. The relationship between the local PSU and the international PSU is good, this was evident when they met, they were close and looked as if they worked well together. - The project had changed so much of management internationally, but there was no problem in transitioning into new relationships with the new international and local project leaders. - VLIR-UOS paid for the costs to conferences. - There were no problems with the financial processes with local and international PSU. - The office efficiently communicates all logistics. - PSU Belgium was very helpful, even to the extent of doing registrations on behalf of students if they were delayed. - Learnt a lot about work ethic, lab work & skill which is being used now. - The local HOD in the department does give breakaway time to manage work and studies. - VLIR-UOS bought everything needed to extract DNA, this was a turning point in the student's research work. - VLIR-UOS funded the research by paying for costs related to travelling and small machines for analysing samples. - Since there is already a relationship with Belgium, the project plans to send lab work to Belgium universities. - Maintaining an accredited lab is a detailed process, there needs to be a technician, lab managers and all other expenses related to accreditation. - Having a Technician is essential in the field, and this has been a great challenge.

	- Balancing, teaching and field work, was also a challenge. - Covid-19 had negative and positive effects for some students in the project. One student who had taken some samples for research before COVID, could no longer use these later. - But for the other student, Covid-19 gave the extra time to finish her PhD thesis. Before Covid-19 the student was teaching as well, so when they could engage with students online from home, she became more flexible with time. She had a resubmission of her PhD, it was on re-calculations of seasonal data, she was able to do this well during Covid, as she had enough time with the lockdown.
Final judgement/comments	
• Project management seems highly efficient and regulatory procedures were followed. • The research findings and the research work done is of good caliber and high quality that is recognised, that's why the students are offered jobs by other institutions. • Project management was results driven and provided flexibility to staff members in order to perform well & complete PhD's. • VLIR-UOS & Belgium universities were supportive, improving research, academic quality & providing opportunities for learning, skills and knowledge sharing and opening doors for collaboration.	

Sustainability	
4.1 Institutional Score: Good	- Project part of finding solutions to Africa and UL prepared to assist & cover any gaps from NRF funding - When anything is needed, follow UL channels & received funds/equipment e.g. needed vehicles for field work & this was purchased through UL - The Project is in a position to provide supervision to Masters & PhD students. - Plan in place for succession. - Tied to employment contract after receiving UL training & support have to remain 6 years at the university - If the current Project Leaders were to leave UL right now, the current students can definitely run this project, and this has been as a result of the quality of the VLIR-UOS programme.
4.2 Financial Score: Good	- Water Research Council funding secured. - Through VLIR-UOS programme, the project got NRF, SARCHI funding. - NRF has already funded a student for PhD. - With the current funds, the project can continue to function. - The collaboration with Project 1 on joint fundraising will be done.
Final judgement/comments	
• Good support from UL; the project activities will continue. • There is a plan to develop supervisors and to ensure succession planning. - The project is in a good position to attract funding thanks to the high status and recognition received. Through VLIR-UOS programme, the project received already NRF, SARCHI funding.	

Impact	
5.1 Academic level Score: good	- Health risk assessment of certain species can be posted onto municipal offices where the community members can have easy access to research information, the project just needs to have an approach that would not be conflicting the interests of farmers and other activities around the rivers. - The project also had a Biotech component, where analysis of the fish muscles, the brain and the flesh of the fish, were done to determine the impact on fish.
5.2. Development Score: Weak	- Project 5 research findings on the rivers, is the water & fish highlights quality of this & the effect it could have on surrounding communities and fisherfolk. - This information is passed on to relevant departments & notices put up as well as (informally) shared information to individuals who ask or incidentally meet. - No knowledge or update after passing on information.
Final judgement/comments	
• Research work has strengthened the curriculum increasing the quality of teaching. • Access to lab consumables has helped the project to produce quality findings and to complete studies. • Collaboration with Belgian universities has helped to use lab facilities and for obtaining recognised results, resulting in positive impact on the quality of research and status of the university. • International collaborations have had a positive impact on the work quality. • Informal ways of communicating findings about the rivers and the fish effects on human health and farming could have been formalised and addressed more efficiently. • Attempt to follow up on findings which were sent to relevant authorities (but no follow up by government so far). More information dissemination, contribution to action & an implementation plan is needed for this project going forward. Project 5 could have established partnerships/collaboration with other organisations such as NGOs that can use the findings for better development of outcomes and impact.	

2.3.6. Project 6

TITLE OF PROJECT: FOOD SECURITY

Introduction

Food Security focus on indigenous chicken and crop production with a biotechnology unit for research and training on proteomics. Improve production and establish stress conditions through research.

Factual data[12]

Hosting faculty	Faculty of Science and Agriculture
Number of staff in research group	9 from South Africa and 11 from Belgium
Status of staff (fixed position, service contract, others)	In South Africa, 6 are permanent UL staff, 1 Associated Researcher from University of Zululand, SA and 1 Associated Researcher from the Agricultural Research Council.
Number of PhD finished/ongoing	18 in total
MSc involved in the project	54
Number of publications in peer reviewed journals	102 (end of 2019) in international peer reviewed journals, and 7 in national peer reviewed journals

Evaluation questions

Relevance	
1.1 Responds to needs Score: Excellent	- When looking at the university and related aspects, the aim is to improve the level of healthy living within the communities surrounding the university. The matter of importance is human resources development and improving the livelihoods. - Project 6 has truly achieved this objective and more. Improved well-being of people in the area & beyond – this is the UL mission. - This project is responsive to the National Development goals as well the University's goals. - Climate change adaptation & reliance in agriculture to ensure food & livelihood security meets has global importance & relevance. - The project is passionate about the production of chickens and crops, thus improving the nutrition of the people around the university. - The selling of chicks stopped during COVID-19. - Some of the Venda indigenous chicks were sold to the local farmers. - There were awareness programme studies, done on the soil, and the research findings were communicated in these community outreach activities.

[12] Ref. Final annual progress report 2019 (AAR_ZIUS2019AP021_UL_Y10_final)

	- The project collaborates with the officials from the Department of Agriculture. - The project works with community members to inform and empower the community. - Partnership with ZZ2 (a commercial farming entity) also happened to improve the livelihoods of the farmers. - The project assisted farmers on soil health awareness, how to promote good farming soil, through manure and other soil fertilizers. - Project 6 did a lot of demonstrative sessions for community members. - Some of the research samples on the chicken project was collected from the community members. - Since 2018, the project started going to the farmers and teaching them how to scout for pests on their farm, this improves the quality of farming in the community. This relates to relevance because community engagement has become a deliverable in the institution. - Grateful to VLIR-UOS from begin to end.
1.2 Synergy Score: **Good**	- Collaboration with Project 1 has improved internet access for the whole University and the project. - There are data collection systems from Project 1 which are useful to Project 6. - Projects1, 2 & 6 continue collaboration and attempts to replicate the work in other communities and not only Dikgale. - Information from Project 2 really helped Project 6, like the information received from Project 2 on the health status of the community targeted by Project 6. - Students from Project 6 employed by UL in Project 6 & also Deputy Dean in Project 1. - Even though most of the activities are off shoot projects, they belong to the VLIR-UOS Project 6 initiative. - The center is a spin off from the work done by the Project through the VLIR-UOS funding. - Project 1 support on statistics, training, software programme etc. very important for research
1.3 Coherence Score: **Good**	- Link established between soil quality & planting crops. - Organic green simple technologies tested in the field and help to improve crop production. - Experimenting with various chicken & crops to produce more and deal with pests. - Work with farmers in the field. - The scientist would take the microscopes bought by VLIR-UOS funds to the community, and show them how the pests look & how to identify pests.
Final judgement/comments	
• The relevance of the project is obvious. • There appears to be good cooperation & links with Projects 1 & 2.	

• There are linkages with surrounding communities & cooperation with various Government Departments & organisations/ business (ZZ2 & Mountview farmers, Dikgale small scale farmers etc.).

Effectiveness	
2.1 Academic Score: Excellent	- Students are trained under Project 6 through the VLIR-UOS programme. - Basic research & data gathered in communities on food security in Dikgale & implemented by the school, achieved good results & produced good students and out-performed other VLIR-UOS projects (in nutrition & publications on crops & chickens). - PhD graduates under project six were fully capacitated. - The project was able to produce the anticipated targets. - Project 6 outperformed on PhDs and PhD publications. - Many publications were produced: journal articles = 204, book chapters = 8, conference abstracts = 179, conference proceedings = 81, books = 3, which are cited widely nationally and internationally as reflected by citation indices. Five leaflets and flyers and 10 posters were produced to inform the stakeholders and the public at large about the ongoing activities in Project 6. - Masters and PhD students are now employed in the Government, employed at other universities and others are with corporate companies. - The project has supported students from other SADC countries, who have completed their PhDs and went back home. - 2 Head of Departments were trained in the programme. - Students who received the opportunity to go and study in Belgium have come back to train students themselves and to teach them how to do research (based on the methods learnt in Belgium). - Co-publications and co-supervision were really good and internationally recognized. - Good cooperation with biotechnology & microorganism, set up center, funded by UNESCO & UL person appointed as chair. - Add to UL reputation. - Students from UL went onto other international universities, including for a Post Doctorate in the USA made possible by VLIR-UOS funding. International research collaboration was done with Belgium, Spain, Italy, India, Pakistan, Mozambique, Malawi, Zimbabwe, Swaziland, Iran and USA. - These achievements are directly through the support of the VLIR-UOS programme. - Now the research culture is part of UL & considered to be of high quality. - Honors and Master's students now have good quality research and statistics.

	- **Good interaction with Project 1, considered to have good statistical analysis.** - More PhD and MSc students graduated in Animal Production, Plant Protection and Biotechnology. Some (3) of these graduates remained at UL and are contributing to improved teaching, research, dissemination of knowledge and community engagement. Some other graduates are now employed by other universities in South Africa (University of South Africa, University of North-West, University of Mpumalanga, etc.) and else-where (Federal University of Technology in Nigeria, University of Namibia, etc.) along with the Agricultural Research Council of South Africa. - Some of the employees of the University had only Master's and have now been assisted by the VLIR-UOS programme to do their PhDs. The university automatically appoints them as Senior Lecturers. - Some students didn't complete writing thesis due to 6-year rule of UL. - Senior Researcher is training Post Graduate students now, but in 2012 she benefited from VLIR-UOS, her PhD was funded & after graduation, she went to work for Agricultural Research Council, and now has come back to work at the Green Biotechnology center. The fact that she had received international research exposure, helped her a lot. - Important research being conducted by students to use green technologies to improve crops, yield, nutritional value, deal with pests, climate change adaptation. - The lab is well-equipped and there is now a Senior Researcher and Technician at the lab (previous student). - The Biotechnology lab is serving other departments and played a very important supportive role to projects in other departments and PhDs from staff members, such as: Department of Microbiology, Biochemistry, Botany, LATS, Biodiversity, Aquaculture and Agriculture. - Developed 2 Venda chicken lines with better feed utilization efficiency and growth rates. - University teaching staff members were more easily solicited as invited professors to other universities in South Africa (2) and abroad (1). In fact, the School lost a prominent animal breeder, who became the Vice-Chancellor of the University of Botswana. Thus, the scientific knowledge and research culture gained with the help of VLIR-UOS funding made the School of Agricultural and Environmental Sciences an internationally recognized centre for indigenous chicken and crop production/protection, and the University of Limpopo Biotechnology Laboratory under the leadership of the late chair-holder of the internationally recognised UNESCO Chair for Biotechnology.

2.2 Development Score: Good	- The research done by the project has impact on communities because of the rural location of the university. - As part of the University's policies, community outreach is compulsory, and Project 6 is relevant. - Some of the beneficiaries of Project 6, are farming organically. - Startup farmers selling indigenous chickens & feed, produced data & supplied them with chick stocks and feed keeping the parent chickens. - The project uses its research knowledge to groom and produce the chicks that are given to the farmers. - The nutrient requirement of the breed was applied on the chicks which have been passed over to the farmers for an improved and healthy livelihood. - Two indigenous Venda chicken lines with improved live weights were developed and their respective feeds were formulated. The improved Venda chicken lines and their respective feeds and management practices were tested at the University of Limpopo farm and at rural farms in the Dikgale area of the Limpopo Province. The knowledge on improved Venda chicken lines and their respective feeds and management practices have been transferred to stakeholders through workshops, conference presentations and article publications. The introduction of chicken farming in the Dikgale area improved nutrition and wellness of rural communities. Rural farmers are selling chicken meat and eggs, thereby increasing their income, and this empowers them to send their children to school and buy other required needs. The economic feasibilities of the improved Venda chicken lines and their improved feeds and management practices haven't yet been done. The main reason has been that chicken breeding and the respective feed formulation are still on-going and not final. It is hoped that this will be done in the coming years. Breeding work on improving egg production of indigenous chickens did not take place because the breeder, Prof D Norris, left the University of Limpopo for a Vice-Chancellorship position at the University of Botswana. - The pandemic affected the chicken production project, COVID-19 has put a dent on the project. - During Phase 2, the ARC contributed over R2.5 million to UL and other 2 universities for the development of smallholder farmers. The ARC Board has recently committed more funding to the 3 Universities for the development of smallholder farmers. Similarly, the Department of Agriculture was during Phase II a major funder by supporting with a R 750 000 grant for the development of smallholder farmers. - There is an MOU in respect of the partnership with Blessman Foundation.

	- Currently Blessman is supporting a woman cooperative of farmers who are called the Growing Hope Cooperative. The research is assisting the women cooperatives grow their crops better, this cooperative had started with just growing vegetables, and has now moved to chickens, with their chicken poultry being based at the Mountain View farm (farmers not working directly with Project 6). - UL has brought technology in farming to the project. - Established relationship with NGO (Blessman) to do experiments on their farm & NGO provides training to farmers e.g. including the aqua salvo treatment in the water to feed the crops, use of "worm tea", different variety of crops, improvement of crops, nematoids, etc. - There are also initiatives to train on moringa farming as well as farming work value chain. - There is a new relationship with an organic farmer in the pipeline, to do experiential farming on this farm. - Some community members see the quality of research so much that they would like to have a consistent relationship so they can always stay informed on the research data concerning their farming. - The research done in this project makes people want to continue to have the services of Project 6. - Project 6 engaged with local agricultural offices to communicate research findings. - The research findings have helped a farmer to grow more nutritious okra crop. - Small scale farmers have better crops due to being able to identity pests & improve crop production. - Co facilitated workshops with ARC on findings of research and provided pamphlets to farmers. - The farmers on the ground are able to come to the center and see how nematodes affects farming, the microscopes make it visible, and the farmer can see exactly what is affecting their farming. - Research findings help feed companies to provide nutritious feed for broiler & indigenous for fast growth, nutritious chickens & encourage indigenous chicken breeds. - Only recently community engagement is a deliverable at UL. - In 2020 they held science week & went to 2 areas to train on climate change & how to mitigate this as well as Agroforestry to mitigate land degradation.
2.3 Scientific quality Score: Excellent	- The VLIR-UOS programme enabled spin off activities with the Department of Agriculture, registered products (newly developed nematocides), with visible success. - There are trained skilled technicians at the Project 6 lab center. - A number of PhD students from Belgium came to do research work on Venda chickens at UL. - UL has a nematoid center which has international collaborations.

	- International links to the University improves university rating. - The Project 6 research quality has improved. - An innovative small-scale farmer is assisted with okra crop to make coffee from the okra seeds, experiment findings showed that when the plant is under water stress, it produces more nutrients. - Four innovative products, Nemafric-BL, Nemafric-BG, Nemarioc-AL and Nemarioc-AG phytonematicides were developed, are in the process of being registered with the National Department of Agriculture (registration authority) and are being considered for patenting. During the development of the products, empirically-based protocols for phytotoxicity avoidance, application intervals, shelf-life and dosage models were developed and can be used in the future by the registration authority for similar products. - Students do field work & experiments to identify the pests affecting the growth of plants & how to improve crop production. - Project 6 expands to include farming areas to be able to test & experiment under different conditions.
Final judgement/comments	
• The project appears to have overachieved in the number of PhD's & publications. • The quality of research done in this project is of a high standard and there is National & International recognition of this. • Lab considered to be of good quality. • Noted newly formed relationships with NGOs & small-scale farmers and conducting experimental trails on the NGO site for further rolling-out to communities (by NGOs (as stakeholder)). • The project could assist Mountain View farm/ Blessman with a training manual as informed by the scientific findings linked to the project. • The evaluator was not able to visit the chicken project as it was not operational due to Covid-19, it would have been useful to speak with the farmers or direct farmer beneficiaries (unsure what the challenges are for small scale farmers in nearby area of Ga Dikgale).	

Efficiency	
3.1 Intermediate results Score: good	- UL salary and labour conditions are considered good to retain staff but these don't always succeed. - The VLIR-UOS trained students in areas where the University did not have enough numbers of staff, this programme has allowed the University to have new PhD students who are later absorbed by the University. - When students are releasing publications, the University assists financially. - Human capacity building in Project 6 is very important and it is currently happening in the project for individual capacity building. - Students are more interested in Research, some would like to be absorbed by the institution and lecture, others would like to pursue research.

	- The supervisors in the project leave the responsibility of accountability to the students they are supervising; the students are tasked to take responsibility for their presentations. - The current supervisors are instilling the skill of supervision, PhD students whilst being supervised are tasked with student supervision responsibilities to capacitate them – Belgian supervisors good role model. - It is a large bureaucratic process to obtain an academic position when someone starts from a more technical position within the university (even with a PhD degree). - Project 6 overachieved in no. of PhD's & publications, mostly met & exceeded targets. - There was overall efficiency because the money put into research resulted in a lot of publications which generated funds for the University and boosts the image of UL. - PhD & MA graduates (now unemployed) want to study further unsure if possible as VLIR-UOS funds not available. - PhD student was on contract as lecturer but no position available at UL to renew contract after PhD, now unemployed
3.2 Relationship input-output Score: Good	- Students have benefited a lot from the project equipment. - The Belgian project leaders were very helpful. Their expertise and that of the other project team members from the University of Ghent and Brussels was highly appreciated. - There were cases of high commitment from the North supervisors e.g., a Belgian project leader who came in a wheelchair and showed dedication. - Although the contribution of N project team members is not always explicitly visible, they contributed extensively to the project. - Students present & are provided with good feedback. - Students benefitted by going to Belgium to do their research. The planned intermediate results were very much exceeded. For example, 18 PhD (aim was 9) and 78 MSc (aim was 17) students graduated and 204 articles were published in accredit-ed journals (aim was 27). - The consumables, books, laptops making up a computer lab, all from VLIR-UOS. - There was a lot of activity in Phase 1, especially in terms of infrastructure. - Most the money for consumables was from VLIR-UOS. - Currently internal students from other departments are benefiting from VLIR-UOS infrastructure. - Research cultures from Belgium students is shared by the students from the SADC countries & the local students, in terms of level of commitment & quality research. - At the UL, there was the perception that in the N, researchers were paid a honorarium by the project (which was not the case).

3.3 Project management core: Good	- VLIR-UOS assisted students in buying consumables for the research work. - VLIR-UOS paid for fees and buying of consumables which are now being used by other students in the project. - All students that needed consumables for Project 6 were fully funded not only VLIR-UOS recipients. - Project 6 beneficiaries benefitted from writing workshops arranged by VLIR-UOS through the PSU. - There was value for money, management was very strict on output. - PhD students were encouraged to push and make sure that they write a report of where they were. This made the students push themselves and be accountable. - The programme was able to cover what needed to be covered. - Management of programmes is considered to be good. - Management had great interpersonal skills, they were able to engage well with the beneficiaries of the programme.
Final judgement/comments	
• Benefits through VLIR-UOS funding noted, scholarship, use of consumables, exchanges, international exposure – this was all highly appreciated • Concerns were raised about not longer receiving VLIR-UOS funding to continue with PhDs/Postdoc. • Appreciation of interaction with & experience of the Belgian counterparts. • It was said at UL that the Belgian "culture" in terms of work ethic, commitment and leading by example are important for individual role-modeling, and helpful to install this in UL projects. • There were differences in partnership commitment noted (some individuals appeared to show more commitment than others). Not all Belgian partners participated & cooperated as expected. • Efficient financial management by PSU.	

Sustainability	
4.1 Institutional Score: Good	- Some concerns noted that the institution may struggle with staff retention. - The challenge is that the institution may not be able to attract people because of its location, people are established where they are and will not come to a rural area. - Project 6 Supervisors are strengthening mentoring skills of students. This is relevant in case students themselves continue in a teaching/supportive role in the future. - This mentoring is sustainable, this is also recorded in the University policy, that there should always be a co-supervisor. - Retained some staff that have PhD's. When Master's lecturers get their PhD they are promoted immediately to Senior Lecturer with more benefits. - Lost some staff to other universities, e.g., 1 person now VC of Botswana university.

	- Published papers receive R41,000 so this helps in motivating to publish research articles. - PhD staff coming from outside the university appear to get better salary conditions than those that obtained PhDs within the university. This is not motivational for staff retention.
4.2 Financial Score: Good	- VLIR-UOS funded research provided equipment, which is currently generating income, and will continue to do so after VLIR-UOS. - The equipment purchased by VLIR-UOS has improved research and produced quality data which has resulted in new partnerships because of the culture of research, and especially analysis. This exposes the project to possible funding partnerships. - The ARC is funding the project, as well as the NRF, attracted by the research culture at UL. - Potato SA recognises the work & is currently funding. - The University recognises the quality of work done by the project and will fund the project beyond VLIR-UOS. - There are already plans for the center & VLIR-UOS house extension. - The ending of the VLIR-UOS funding means that there may be a limited number of scholarships for Post Graduate student intake. - Students will now have to look for their own funding. - Research is expensive. - The Project Leaders are currently working on applications for new projects as to assure that money for buying consumables and paying students remains available in the future. - The Project Leaders are currently working on a proposal submission. - UL is generating income from publications by PhD students, and the students are encouraged to publish because UL provides an incentive as students receive a portion of these funds.
Final judgement/comments	
• The project has sufficient funding arranged for project sustainability (as confirmed by the N project leader). • UL will step in with institutional funding but there will be a gap in terms of aspects that VLIR-UOS funded that the institution may not fund. • Need plan for staff retention & succession planning for overall sustainability.	

Impact	
5.1 Academic level Score: good	- Research capacity improved. - High number of PhD's and publications is an acknowledgement of high academic standard. - Recognition from Government, National Universities & International Institutions on the quality research produced.
5.2. Development Score: good	- Experimental research helping small scale farmers/communities directly.

	- Relationship established in surrounding communities and beyond to test variety of sites. - Improving crops, resilience & adaptation to climate change benefits farmers. - Don't see impact on the small-holder farmers but there are a number of success stories (e.g. producing organic vegetables through effective use of micro-organisms to make manure – move away from synthetic material) – (also academic impact) - Indigenous chicken growth rate low, introduced nutrients to improve growth rate (also academic impact).
Final judgement/comments	
• Programme seems to have done well with PhDs, publications, & staff PhDs as well as staff promotions. • High potential for development impact in terms of nutrition, livelihoods, climate change adaptation/resilience, food security, increased production through community engagement.	

Other comments that touch/are related to the overall programme

- There was a general concern about different treatment of benefits for Belgians/SAF project staff, although this is not true and only a perception. Belgian project leaders did not receive any honorarium to realize the programme's projects. It is possible though that the comments referred to the compensation fees that were received to cover administrative costs (2850 EUR /year).
- The importance of the Belgian working culture runned as a common thread through the project and appears to be significant for the results.

3 Conclusions and lessons learned

1 The IUC programme at the University of Limpopo is highly relevant and responds to the needs of involved stakeholders at different levels (local, regional and (inter)national level)

When designing the programme, relevance was considered from **different angles**: from the perspective of institutional needs at UL such as academic, research and education needs, confirmed by the leadership of the University of Limpopo, and needs of communities and other external stakeholders to improve the life situation and conditions in the region of Limpopo in different areas. Based on the findings, the programme is highly relevant because it **aligns with the national priorities** of South Africa (aimed at improving education, livelihood, public health, employment and reducing poverty), **international development priorities** (such as the SDGs), **institutional and academic needs of UL** (improvement of education and research capacities) and its desire to **increase developmental impact**.

The programme also adds value (in terms of budget, approaches) compared to other interventions at UL (financed by others). **Project 1** deserves specific attention since it was connected to the other thematic projects in a transversal way. This project turned out to be highly relevant, enabling project researchers to uplift the quality of their research in a significant way. Overall, services provided by project 1 have helped UL considerably in strengthening its ICT and internet capacities.

Another perspective to look at relevance is the extent to which **gender and environment** are included in the design of the programme. Environment was at the core of the programme, while gender mainstreaming was only included in terms of having attention to a balance between female/male students. The programme did not integrate a specific gender component, although gender was a transversal theme to work on. Although gender balance was in favour of female students in the projects (both PhD and MSc), the programme had not developed a **gender sensitive approach** at organizational, institutional or academic level, which can be seen as a missed opportunity for the programme and UL.

Relevance of the programme was also assessed against the extent to which the programme design allowed for **internal and external synergy** and collaboration between the involved stakeholders. This was the case since from the start of phase II, internal and external synergies were mapped and mentioned in the programme proposal.

2 The programme appears to have achieved its institutional/academic and development objectives, although results differ from project to project.

Based on the findings, it can be concluded that **considerable progress has been made** by the University of Limpopo in the implementation of the programme and its results achieved.

Institutional and academic strengthening

It was said that at the end of the programme, **more staff with a PhD** was being employed by UL (although an exact number or % could not been given). Multiple examples have been given during the evaluation of graduated students, being able to achieve a good position and job within or outside UA.

Although strategies have been put in place (tying graduates for 6 years longer to UL, succession plans), **staff turnover** remains a problem for UL. By itself, the departure of staff or students to other universities should not be considered problematic, but rather as an indication of the good standard of academic and research quality of UL – this is an achievement for UL. Also, generally (and in South Africa especially) people tend to leave rural areas even if the salary is lower in the city because city life translates to better access to resources, better amenities and the perception of higher status associated with urban lifestyle. Therefore, **staff retention** as such is not an accurate indicator of how well the programme or UL is doing in terms of institutional capacity building.

A point of attention is that not all selected **PhD students** seemed to have been on track with their research during phase II (some have not graduated yet). Overall, the different projects have contributed considerably to **strengthening research capacities** and specific expertise and knowledge in the research domains, resulting in a **significant increase of academic publications and development of educational material** to be included in curricula (but not having achieved (yet) its anticipated targets). At the moment of the evaluation, publications were still being realized that were said to be attributed to the programme. The purchase of lab equipment and supplies and specific support from project 1 in data collection and ICT services helped in **enhancing research capacities** and results. **Internal**

New (data collection) methods for research have been introduced, with project 1 being of significant support, and applied during the first and second phase of the programme, which have contributed to **quality research results.**

Development objectives

Overall, the evaluation revealed that the **development objectives have been achieved**, in some projects beyond expectations (project 1,2, 4, 6) and in other (project 3,5) satisfactorily but it could have been better: project 5 managed to produce high quality research results but did not manage to convince the authorities to make use of them. Project 3 achieved its objectives but could have done better in terms of wider outreach to more schools.

3 Financial sustainability of most of the projects have been achieved. Efforts have been done to ensure institutional sustainability.

Internal and external synergy

Synergetic activities within and between projects/departments (see further below under sustainability) have contributed to enhancing institutional capacities like e.g. data sharing, although the **intensity of internal collaboration** has differed from project to project. Collaboration beyond projects with other stakeholders has contributed to achieving more outreach towards communities, and to attracting external funding, necessary to achieve financial sustainability. Although results differ from project to project, most of the projects are said to be sustainable, able to continue their activities and in some cases explore new research topics. The demerger between UL and SMU was said to be detrimental for collaboration, with a possible effect on the potential impact of the programme (which could have been better with stronger collaboration and mutual support).

Synergy and complementarity have been promoted within and between projects, resulting in **promising examples of interdisciplinary collaboration within the university and with external stakeholders**. In some cases (like in project 5), earlier involvement of the government could have increased the probability of more ownership of the authorities for the final results, potentially resulting in policies benefiting the local stakeholders of the project and the local environment.

Level of institutional integration and outreach towards communities and other external stakeholders

The evaluation could not assess whether examples found, related to the achievement of the IUC overall objective of strengthening research capacities are already **common practice and well embedded** in the university. Of course, **transformational changes** like changes in research culture (data collection, analysis of data, application of new methods etc.) and a more research-based education take time to get well embedded. The development and specifically the application of policies at UL level (such as an e-learning policy, a datamanagement policy, but also a genderpolicy ensuring e.g. gender sensitive research) are relevant though to ensure that the now **existing research and learning culture at UL** will remain sustainable and be transferred to future student and staff generations.

During the evaluation, it was also not possible to assess how **widespread the effects of dissemination and outreach of the results** have been so far. Examples have illustrated that dissemination and outreach of results towards external stakeholders and communities have been done, but with a few exceptions, it was not possible to estimate the scale and widespread nature of this. Firstly, because no indicators at overall and specific objective level were developed at project and programme level and no baseline information was available. This made it difficult if not impossible to assess impact. Secondly because the setup of the evaluation did not allow to do this kind of assessment.

Initiatives are undertaken to contribute to financial sustainability

The evaluation findings reveal that working towards sustainability in terms of setting up spinoff initiatives and the establishment of partnerships with other institutions, foundations, councils, private sector companies etcetera is taking place. Financial sustainability of most of the projects has been assured. Some projects will not be able to maintain the same level of PhD support, based on their actual financial and institutional situation, or did not prepare phasing out of the programme, probably resulting in the disappearance or downsizing of some activities with less support for PhD and MSc students.

4 Overall (financial) management of the execution of the IUC programme has been done in an efficient way, with clear division of roles and transparent communication between North and South

The development and use of manuals, project documents and templates for reporting, a new way of programme budget administration as well as **support provided by the PSU and programme management in Belgium** has allowed efficient (financial) management of the programme and the projects, with the exception of some frictions throughout the whole programme period regarding expenditure management for field activities, resulting in a perception of different treatment between public health and more scientifically oriented activities.

The fact that the programme has worked with **yearly budgets** that needed to be spent within the year was **not very conducive to the overall efficiency**: this sometimes resulted in less necessary expenses within a year (the budget 'must' be spent) while unforeseen expenditures were limited to the boundary of the annual budget. Some investments done were not well thought and analyzed in advance, resulting in equipment not (fully) utilized or with the risk that, once maintenance is needed, this cost will be too expensive to carry.

The existing manuals allowed for **a clear division of roles**, although in some projects more involved was expected from the Belgian counterparts (project leader and/or specific Flemish expertise that was not mobilized). Joint steering committees contributed to **communication, joint learning, overall coordination and steering of the** programme, while the local committees have contributed to closer follow up and monitoring of the projects. The transversal project 1 has considerably supported, through ICT investments in hardware and building of skills, the improvement of online communication such as online meetings and e-mail communication. Overall, the **quality of communication** during programme implementation within the projects was not the same in all projects, and mainly depending on individual engagement and motivation of project staff members and leadership to strengthen this important aspect of project and programme coordination. It is likely that the lack of communication and therefore also coordination of actions within and in some cases between projects have had a negative impact on the final results.

5 The logical framework serves as a planning and monitoring framework, but turns out to be less effective as joint learning instrument and in measuring progress in achieving the overall objectives

Both at project and programme level, **the logical framework was used** by the project leaders and programme coordination and management **to plan and monitor progress in achieving the overall objectives**. The framework was not considered an instrument allowing joint learning from progress made. On the contrary, the detailed annual progress reporting was seen as an administrative burden rather than an opportunity to learn from progress made so far.

The absence of indicators and relevant baseline and monitoring information at the level of overall and specific objectives at both programme and project level, made it difficult to assess progress made at this level. Some project leaders also confirmed that this level of monitoring was missing during the programme implementation.

The **standard indicators (KRIs) at programme level** give an indication of the institutional progress made in the areas of HRD, strengthening of research and education and extension services. These indicators are quantitative and interesting to monitor overall progress made at institutional level, although they do not capture the **quality** of the progress made, with exception of the indicator, related to the number of articles published in international peer reviewed journals (through the support of the projects)).

6 The implementation of the IUC programme is influenced by both internal and external factors, contributing or hindering progress towards achieving the overall objectives

Factors influencing positively the results achieved are related to the support received from the PSU unit and support provided by the North and South programme coordination; the motivation and engagement of the PhD students and the engagement and (senior) expertise of project coordination and leaders North and South; university management of UL being overall; ownership for the programme by North and South partners including the university level. The results of the programme have contributed to increased national and international recognition and positive image building which in turn has led to more access to and opportunities for fund raising and partnerships.

Hindering or limiting factors have been, so far, the fact that gender integration/mainstreaming lacks a clear strategy, approach and engagement of all university staff (including the programme and project level). Attaining synergy and complementarity require resources (capacities, time, sometimes funding) which are not always available. Some frictions related to financial management at UL (expenditure management) have created unnecessary suspicions about the treatment of different groups of researchers (the more qualitatively versus the more quantitatively oriented group). The geographical location (rural area) of the University is challenging for internet availability. The limited engagement of some North partners is a missed opportunity for knowledge and expertise building. Turnover of project staff/Heads of Department has hindered progress of project achievements. A contextual factor such as Covid-19 has delayed some of the phasing out activities and led to the regrettable loss of some students and staff members.

4 Recommendations

In line with the findings and conclusions following recommendations were developed. The recommendations are grouped according to whom they are directed.

4.1. Recommendations directed to the development of future programme and projects (VLIR-UOS/ UL)

1 The need for a tailormade retention and succession plan

When projects or programmes include an **institutional component**, it is important to include the development of a **retention and succession plan** as early as possible during implementation of the programme, and not wait until the programme has come to an end. Regarding the IUC programme, succession plans are still not developed for all projects (as far as could be verified). This is important though to embed institutional results in a sustainable way, and to include development of the necessary competencies of these persons that will ensure continuation of the created learning and research culture.
During the evaluation, examples of succession plans were found that were **tailor made** i.e. developed based on the needs within the involved departments. This is a good practice, since standard succession plans do not exist and always need to be tailored to the local situation for which these plans are developed.

2 Indicators at overall objective level in the logical framework should be developed in a more coherent way with the indicators at project level and capture better the desired changes at institutional level and beyond

When developing a monitoring framework for a project or programme,, and to make sure that progress towards achieving overall objectives can be measured and monitored in such a way that it not only captures part of the desired changes at institutional level as it did now (the quantitative indicators at institutional level), but also the changes that are more difficult to measure (e.g. changes in terms of an increased research based culture, interdisciplinary approaches, the quality of synergetic partnerships at university level etcetera), other **(qualitative) indicators** could be included in future projects or programmes.

In addition, it is recommended to also include indicators at the overall project and programme level, to enable assessment of the achievement of the objectives at this level. Measuring indicators at result level give a good indication of the progress made, but are not a substitute for measuring results at the objective level, since at this level anticipated changes are – in general – of a higher and more complex nature.

Next to the existing tools, it could be analysed if **other tools could be used to measure the contribution of the programme to the desired impact** at the end of a project or programme at the level of involved external (local) stakeholders, particularly when these projects or programmes have a long duration such as the IUC programme. In this case, it can be difficult to develop good indicators from

the start. The use of methods like Sensemaker or Outcome Harvesting can compensate this lack of good indicators.

4.2. Recommendations at UL level

3 It is recommended to include gender as a transversal component in future projects and programmes, and to revisit the concept of gender mainstreaming

The progress made on gender does not reflect a well thought understanding of gender mainstreaming in the projects and at programme level. The fact that gender mainstreaming received little attention in general at the university was not helpful either (which also seems to be a general observation in universities).

It is recommended to get more clarity on the concept of gender mainstreaming, first of all at the level of the university. On this basis a **gender strategy** can be worked out. Gender can be better integrated in research, the organization and intake of staff/students. At the same time, it is also crucial that the university management is involved in this process and is committed to invest resources and to actively promote gender equality in the university at different levels (organization, intake of students, education and research processes).

It is important to develop a gender strategy that is ambitious, but also realistic and feasible. Consequently, the programme should develop achievable targets to which the programme can work step by step.

It is further suggested to ensure **a gender balanced participation of men and women in the formulation phase of projects and programmes.** Although female participation in the design of the next programme does not necessarily guarantee a stronger gender focus of the programme, it could help in having more attention paid to a it (as long as this participation is also done in a sufficiently gender-oriented way).

4 It is suggested to continuously monitor the learning and research culture within UL

This recommendation is important in the light of ensuring sustainability of the created research and learning culture. During the evaluation, it could not be said to what extent exactly the number of staff members with a PhD had increased. This kind of information (among other such as the number of publications in high quality journals) is important though to monitor the existence of a research culture. The same applies for the learning culture: new learning techniques and methods have been introduced (more blended and more variety of learning), but these need to get well embedded and widespread in the organization, to ensure that learning will continue to take place in the way it has been developed during the programme implementation. This could not be assessed during the evaluation because no indicators exist against which the learning culture could be measured (such as the use of blended learning methods, the level of variety in learning techniques etc.).

Therefore, a recommendation should be to develop a **dashboard with some critical indicators** and a standard level to be achieved for each indicator, allowing the regular **monitoring of the learning**

and research culture within UL at different levels during the next years and the undertaking of measures if needed.

5 In line with recommendation 2, it is suggested that the university management actively supports the promotion and application of policies that can be derived from the IUC programme, that could attract a broader public within the university and beyond

This to attract more users (e.g.in the case of ICT (e-learning), data collection methods etc.) and to facilitate more possibilities for spinoff initiatives and collaboration with other external stakeholders.

The development of certain policies should also contribute to the embedment of research results.

6 For future projects or programmes involving different departments, it is recommended to develop clear communication guidelines

This communication is meant to improve overall communication within and between projects when different departments/institutions and/or disciplines are involved. This should allow to ensure regular information sharing and exchange on project updates, independently on who is in charge and thus individual engagement or motivation. This should ensure that communication and exchange of information between involved university units can continue in case of turnover or unforeseen changes in staff composition.

7 The design of future projects and programmes should consider involvement of external stakeholders from the moment it is relevant

This recommendation refers to project 5 in which there was little ownership for the research results with limited effects at community and political level as a consequence. Early involvement of relevant external stakeholders could counter this problem although it cannot be guaranteed that this will always be the case. Even though some external stakeholders are relevant to involve in certain projects, for external reasons (political, resources) it could that collaboration does not lead to the desired results. Eventual partnering with less conventional actors such as NGOs or grass root organisations could then be considered, which could advocate for using the research results by the appropriate stakeholders, aimed at increasing the potential for impact.

4.3. Recommendations to VLIR-UOS

8 It is recommended that future projects or programmes make sure how equal and mutually supportive N-S partnerships can be achieved

This is an important recommendation to prevent or reduce to the extent possible the creation of too dependent relationships between N-S partners, the existence of situations where students do not feel comfortable when coming to Belgium because of intercultural and contextual differences. It is suggested that these aspects are thoroughly discussed and analysed in cooperation with the South and North partners.

9 In future programmes or initiatives, it should be clear from the start what kind of engagement is expected by whom at different level and to find ways how this can be monitored.

This recommendation refers to the findings that in several projects, (too) limited engagement of the Northern partners (project leader, PhD co-promotors) or Flemish team members (in terms of specific knowledge and expertise) was experienced. At the same time, North partners had also expectations towards their Southern partners which were not always fulfilled. It is not clear why these differences in expectations still existed at the end of the IUC programme (not expressed, not listening to each other?...). The existing communication channels do not always seem to be the appropriate ones (e-mail, steering committees, online meetings) to discuss this kind of issues.

Making mutual expectations clear and explicit from the start is essential as well as the inclusion of moments for reflection on this which could avoid frustration and the fact that expectations are not fulfilled.

10 It is suggested, for future programmes, to reflect how budgets could be used in a more flexible way, allowing more tailormade spending within the overall programme period of 5 years.

This to respond to the conclusion that planning and spending budgets on a yearly basis, with only a limited margin to shift budget to the year thereafter, sometimes resulting in less efficient use of budgets.

11 It is suggested that VLIR-UOS rethinks the use of the logical framework as a joint learning instrument in future programmes

The recommendation does not want to eliminate the logical framework, as it is considered useful by the programme management and coordination to follow up overall progress of the projects.

However, the logical framework with mainly quantitative indicators or no indicators at all at the overall objective level, and in some projects neither at specific objective level, does not allow to measure the more complex changes at the level of the general objectives at project and programme level.

To promote mutual learning and at the same time monitor and measure the more complex changes, it is recommended that VLIR-UOS considers which monitoring and learning tools could complement the logical framework.

ANNEXES

Annex 1: Terms of Reference

Annex 2: Evaluation framework

Annex 3: Programme on-site visit to UL

Annex 4: List of persons consulted

Annex 5: List of documents consulted

VLIR-UOS supports partnerships
between universities and university colleges
in Flanders and the South
looking for innovative responses
to global and local challenges

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