

Final Evaluation of the IUC partner programme with the University of Nairobi (UoN), Kenya



Paul de Nooijer
Okwach Abagi

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Background and disclaimer

The VLIR–UOS Programme for Institutional University Cooperation (IUC), which started in 1997, is an interuniversity cooperation programme of the Flemish universities¹. Based on a system of programme funding provided by the Belgian Government, the Programme is directed at a limited number of carefully selected partner universities in the South. Each partnership, covering nowadays a maximum period of ten years, consists of a coherent set of interventions geared toward the development of the teaching, research, and service functions of the partner university, as well as its institutional management.

Every three to five years, the cooperation with a partner is evaluated. All ongoing cooperation programmes are evaluated by an external, independent evaluation commission. The country visits of these commissions, usually composed of an international and a local expert, are preceded by an extensive self assessment process. All evaluation commissions have produced an evaluation report that, in principle, is meant to be self-contained, i.e. containing the essential factual information, as well as conclusions and recommendations.

This report represents the views of the members of the commission that evaluated the IUC Programme with the University of Nairobi (UoN); it does not necessarily reflect the opinions of VLIR–UOS. The evaluation commission bears sole responsibility for the report in terms of its content, as well as its structure.

The Evaluation Commission

The external evaluation commission for the partnership programme with the University of Nairobi was composed of two individuals with extensive experience with regard to higher education matters. *Mr. Paul G. de Nooijer*, team leader, is senior education consultant with SPAN Consultants from the Netherlands. He has long-term experience in undertaking evaluation research, in particular in the field of higher education and inter-institutional cooperation programmes, including programmes that have similarities with the VLIR–UOS IUC Programme. He has conducted similar assignments in Vietnam for the Netherlands cooperation in higher education. *Mr. Okwach Abagi* is Director of Programmes/M&E and Institutional Development Specialist at OWN & Associates: Centre for Research and Development in Nairobi. He has extensive experience in monitoring and evaluation and higher education in different countries in East and Central Africa. He participated amongst others in the mid-term and final evaluations of the IUC with SUA in Tanzania.

¹For more details on VLIR and the IUC Programme, please refer to Appendix 2.

Acronyms and abbreviations

AAR	Annual Activity Report
AP	Annual Programme
B.Sc.	Bachelor of Science
CTG	Close The Gap
DGDC	Directorate-General for Development Cooperation
EC	European Commission
EDCTP	European and Developing Countries Trials Partnership
EU	European Union
GDP	Gross Domestic Product
GER	Gross Enrolment Rate
HAART	Highly active antiretroviral treatment
HE	Higher education
HIV/AIDS	Human immunodeficiency virus/
HPV	Human papilloma virus
HR	Human Resources
ICRH	International Centre for Reproductive Health
ICT	Information and Communications Technology
IT	Information Technology
IUC	Institutional University Cooperation (programme)
KMFRI	Kenya Marine and Fisheries Research Institute
Kshs	Kenyan Shillings
KULeuven	Catholic University of Leuven
M.Sc	Master of Science
MASCOM	Marine Science and Coastal Zone Management
MPH	Masters of Public Health
MTR	Mid-term Review
NER	Net Enrolment Rate
NGO	Non Governmental Organisation
NPEP	National Poverty Eradication Plan
PCM	Project Cycle Management
PCR	Polymerase Chain Reaction
Ph.D.	Doctor of Philosophy
PRSP	Poverty Reduction Strategy Paper
RH	Reproductive Health
RIP	Research Initiative Programme (post-IUC)
STD	Sexually Transmitted Disease
ToR	Terms of Reference
ToT	Training of trainers
UGent	University of Gent
UoN	University of Nairobi
VLIR	Vlaamse Interuniversitaire Raad (Flemish Inter-university Council)
VLIR-UOS	Universitaire Ontwikkelingssamenwerking (University Development Co-operation)
VUB	Vrije Universiteit Brussel (Free University Brussels)



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Executive Summary



This report reflects the outcomes of the external, final evaluation commission of the IUC that was undertaken in the period 1998–2008 with the University of Nairobi (UoN) in Kenya. The evaluation was commissioned by the Flemish Interuniversity Council (VLIR) in the framework of its Institutional University Cooperation (IUC) programme and conducted in Kenya in the period 27 January – 5 February 2009. In the 1st phase of the Programme (1998–2002), collaboration focused on the areas of HIV/AIDS and rural health, marine sciences and the establishing of a University-wide computer network. Support was provided for strengthening of teaching and research infrastructure and staff development. In the 2nd phase, the projects in HIV/Rural health (HR) and marine sciences continued while the original networking project was split up into three projects: ICT and Digital Library, Open Learning and Computer Science. The total budget for the IUC with UoN was some € 6.8 million for the period 1998–2007; this budget was primarily used to cover the costs of investments and scholarships as well as operational expenditures.

The evaluation methodology used followed the VLIR–UOS methodology for evaluation, with an iterative evaluation process allowing for participation of the various IUC stakeholders. Unfortunately, over 3 months, the draft evaluation report was only reviewed and commented upon by VLIR–UOS and two Belgian project leaders. Maximum use was made of available documents (e.g. self assessment reports, annual planning and progress reports, etc.) and information from meetings with VLIR–UOS (Brussels), staff of UoN and the Flemish universities involved in the cooperation and visits to some of UoN's facilities. Regrettably, not all self assessment reports were provided to the evaluation commission.

IUC programme management was entrusted to two programme steering committees, one at UoN and one in the North, that were set up to coordinate the implementation of the partnership programme. In addition, some joint meetings of the committees were held with participation of project leaders from both sides and the two Flemish and UoN coordinators. The Flemish and UoN coordinators have played a pivotal role in Programme implementation and their efforts have been crucial for its realisations. At the same time, the evaluation commission observed little southern ownership of Programme management, while Programme efficiency was hampered by *inter alia*, little synchronisation of UoN and VLIR–UOS procedures, delays in money transfers, insufficient pro-active monitoring of programme implementation, lack of administrative support for the Flemish programme coordinator and decisions to cut the financing of topping-up allowances for Kenyan project leaders. Little follow-up appears to have been given to two independent VLIR–UOS financed management missions that were undertaken in 2003 and 2005.



The Programme is judged to have been relevant in that it has been in line with the UoN's own strategic plans as also described in its Strategic Plan for the period 2008-2013. Despite the administrative and organisational obstacles mentioned above, the evaluation commission was in a position to confirm the contribution of the IUC to capacity building and institutional development. This was realised through activities in the field of academic development (Ph.D. training (28 people) and, primarily in the 1st phase, M.Sc. training (30 people)), some capacity building for technical and administrative support staff, training-cum-awareness raising on the possibilities of distance education (200 people), improvement of teaching and research infrastructure (ICT (network) equipment, laboratory equipment, academic literature), and introduction and/or improvement of distance learning courses. Particular attention was furthermore paid to stimulating (joint) research, inter alia by making funds to allow participation of UoN staff in national and international research seminars. Thanks to the project, UoN has an operational ICT network infrastructure and the human resources, united at the University's ICT Centre, to run and maintain it. At the same time, the evaluation commission found that graduation prospects are bleak for some of the Ph.Ds financed under the Programme.

The support provided under the IUC has contributed to a total of 43 publications in international and national journals, 43 papers that were incorporated into international conference proceedings and 6 for conferences organised under the auspices of the IUC Programme. A total of 58 publications were prepared jointly by Kenyan and Belgian academics. Regrettably, research outputs have not been well documented, while, despite their potential in areas like rural health and mangrove area management, little effort was made to make more practical use of research findings through community and extension services. Outreach, which was never at the core of the programme, seems to have been limited to the academic community – both national and international.

The Programme has made a contribution to networking (a) within the University, particularly through the network project – though relations between the Computer Centre and other entities dealing with distance education require further reinforcement, (b) between UoN and Belgian academics and (c) between academics from the University of Nairobi and other African universities (amongst others through the African Virtual Open Resources Initiative), that has already resulted in some proposals submitted for external funding (VLIR-UOS, EC, etc.).

Sustainability of the programme results is strong as far as the ICT component is concerned. This is evident from (a) the numbers of staff trained and retained by the University; (b) the mechanisms put in place to retain staff; (c) the organisational set-up and functioning of the University's Computer Centre and (d) the funding made available by UoN to cover ICT related running costs and further expansion of the ICT infrastructure.

The proposed ex-post/phase out programme, includes several workshops (proposal writing, intellectual property rights), funds to allow Ph.D. students to complete their programme, funding for the closing event and funds for each project that had research activities to support the writing of research proposals in 'new domains'. The internal assessment forms, to the extent available, did not include specific follow-up plans; it is at the same time understood that two ICT related proposals were already submitted to



VLIR-UOS, of which one has been approved.

The evaluation commission's main recommendations, with respect to the VLIR UoN-IUC and to the IUC programme as a whole can be summarised as follows:

UoN-IUC specific

- * Laboratories established under the Programme should remain intact, and effectively used, and items should not be distributed among different units or cannibalised. This is particularly true for the PCR laboratory.
- * Clear timelines should be set (and adhered to) for Ph.D. students who have not completed their research and/or thesis writing.
- * To think more proactively about the possibilities for future (research) partnerships and to effectively search for additional external funding. Developing priority research themes could guide such efforts.
- * To examine possibilities for enhanced inter-departmental collaboration, particularly in the field of open/distance education and to pay more attention to the demand side in this field.
- * UoN should take advantage of existing opportunities for networking with other VLIR-UOS universities in the South as well as the North. Joint research should be expanded so as to ensure the sustainability and further development of existing academic activities initiated under the VLIR-UOS Partnership Programme. New areas and forms of networking in academic and research programs need to be explored.
- * There are opportunities for the UoN for offering technical assistance in both the public and private sectors in the region. Based on the foundation laid by the VLIR-UOS programme, the strengthened schools/departments need to market themselves vigorously in the country and region. Funds raised from such activities should then be used to support research activities and capacity building.

General IUC Programme level

- * To undertake a comparative analysis of the various IUC evaluations to effectively learn from these different evaluations for further improvement of currently ongoing programmes with universities elsewhere.
- * To review the existing set administration rules and regulations and examine possibilities for more flexibility and multi-annual funding.
- * To examine the notion of steering committees and how to make these more effective instruments for project monitoring and addressing problems arising in the course of Programme implementation.
- * To institutionalise a system of feedback from VLIR-UOS to the partner institutions in the South and the North as a means of improving Programme implementation.
- * To reconsider the concept of closing conferences and ceremonies and the timing of final Programme evaluations.
- * To pay attention to the issue of motivation of Flemish academics to continue to participate in collaboration activities with universities in developing countries.
- * To consider a consistent policy of topping-up for project and programme management purposes.
- * There are a number of universities which still participate in or have "graduated" from UOS programmes within Eastern and Southern Africa region. Within the



initiative of Inter-University Council of East Africa to harmonize academic programmes among universities within East Africa Community, it might be the right time to support an East Africa/Southern Africa dialogue on how best to form meaningful harmonized and joint academic development programmes in the region. The VLIR Secretariat could take a leading role in providing the platform.

Foreword



Effective final programme evaluation should yield valuable information that can be used by programme stakeholders and funding agencies about whether the programme has indeed realised what it set out to do in the beginning and about lessons learned that could be useful for the future.

For such an evaluation to be successful, active participation of all key stakeholders is a sine qua non. In the case of the partnership with the University of Nairobi (UoN), the evaluation process was therefore designed to be iterative and participatory, involving three distinct opportunities for input from and involvement by the partners: during the self assessment, during the visit of the evaluation commission from 27 January to 5 February 2009 and during the review of the commission's draft final report.

As indicated in the Terms of Reference, the focus of the final evaluation was as follows:

- * the 'global state of implementation of the programme', realisation of objectives;
- * the quality, efficiency, efficacy, impact, development relevance and sustainability of the programme and programme management;
- * the position of the IUC programme within the international cooperation activities of the UoN and 'the added value of the IUC Programme, in comparison to other ongoing donor cooperation programmes';
- * the follow up plan of the programme as elaborated in the self assessment report.

The evaluation focused on the 2nd phase of the cooperation, which officially lasted from 2003 to March 2008. Where appropriate and feasible, the results of the 1st phase, which officially lasted from 1998 to 2002, and which was evaluated in September 2002, were incorporated.

Based on these Terms of Reference, the structure of the report is as follows:

- * Chapter 1 briefly describes the evaluation process, sources of information and indicators used during the process as well as the limitations of the evaluation exercise.
- * Chapter 2 provides some background on the context of the partnership, including some data on Kenya's socio-economic status and developments as well as the country's overall and higher education system.
- * Chapter 3 provides some general information on the University of Nairobi.
- * Chapter 4 provides a brief on the overall VLIR-UOS IUC Programme with UoN, including basic data on the projects that were undertaken in the two phases of the Programme.



- * Chapter 5 deals with the overall management of the Programme and pays attention to the role and functioning of the Steering Committees, and financial management.
- * Chapter 6 deals with the AQUA project and its predecessor MASCOM.
- * Chapter 7 deals with the Reproductive Health(RH)/HIV project.
- * Chapter 8 provides details on the ICT and Library project and the overall Network project of the 1st phase of the IUC.
- * Chapter 9 concerns the Open Learning project.
- * Chapter 10 is about the Computer Science project.
- * Chapter 11 provides an overall assessment of IUC with the University of Nairobi.

Each project-related chapter provides, where appropriate, first of all some information on what was realised during the 1st phase and summarises the key findings of the mid-term review that was conducted in 2002. Subsequently a description of the main characteristics (objectives, intermediate results and core activities) of the project is provided, followed by an overview of realisations. The chapters are concluded with an assessment in terms of relevance, effectiveness, efficiency, sustainability and impact (see also page 11).

The appendices to the report include the following:

- * Appendix 1: Mission Terms of Reference;
- * Appendix 2: Flemish Interuniversity Council and IUC Programme;
- * Appendix 3: People interviewed;
- * Appendix 4: References;
- * Appendix 5: Selected publications and conference papers coming from the IUC with UoN.

Acknowledgements

The evaluation commission would like to express its appreciation to all individuals we met in the course of the evaluation. The information, the dialogue, and the ideas shared with these individuals were instrumental in shaping our thinking. Last but not least, we want to thank everyone for their hospitality during the visits to Brussels and Nairobi.

The evaluation exercise



This chapter provides some information on the scope of the evaluation, the way in which the evaluation was conducted and evaluation criteria and indicators used as well as the limitations of the evaluation exercise.

* Terms of Reference for the evaluation

The final Terms of Reference (ToR) for the final evaluation of the partnership with the University of Nairobi were issued on 16 September 2008 and are provided in Appendix 1 to this report. According to these ToR, issued for three final evaluations simultaneously, this final evaluation was meant to generate conclusions that would allow:

- * 'the identification of strengths and weaknesses of each specific IUC collaboration with the three institutions in particular, and of the IUC programme in general;
- * VLIR-UOS to identify departments and/or research groups that have received substantial support from the IUC programme in Phase II and thus can present proposals for the "IUC Research Initiative Programmes"
- * the formulation of recommendations to all stakeholders in terms of the follow up plan that has been elaborated by the Northern and Southern project leaders
- * to identify and comment upon possible venues for the future of the involved projects in view of establishing sustainability'.

According to the ToR, the scope of the evaluation was to be as follows:

- * the 'present implementation of the programme', i.e. evaluating 'the **global state of implementation** of the programme, both at the level of the overall programme and the constituent projects', 'whether the activities, per project, have met the **objectives**, that had been defined by the actors involved, within the given timeframe and with the given means', as well as the **management** of the programme, both in Flanders and locally, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing;
- * the nature of the programme, which implied evaluating 'the **quality, efficiency, efficacy, impact, development relevance** and **sustainability** of the programme in the light of the overall goal of the IUC Programme, being institutional capacity-building of the local university, as situated in the context of the needs of the local society' and 'the **cooperation** between all parties involved, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing';
- * the position of the IUC programme within the international cooperation activities of the partner university, i.e. 'evaluating the **added value of the IUC**



Programme for the partner university, in comparison to other ongoing donor cooperation programmes’;

- * the follow up plan of the programme, i.e. ‘evaluating the follow up plan as elaborated in the self assessment report ..., in view of the continuation of the different activities that have started up within the framework of the IUC programme (Phase I) and the consolidation of the results as aimed for in Phase 2’.

✿ Evaluation approach and methodology

General

The methodology used for this final evaluation is based on the VLIR-UOS methodology for evaluation. Use was made of:

- * the self assessment forms, to the extent that these were indeed prepared and made available to the evaluation commission in the course of the assignment;
- * other documentation, including annual planning and progress reports and programme documents, information on Kenya’s economy and (higher) education as well as UoN;
- * meetings with VLIR-UOS (Brussels);
- * meetings with UoN faculty who had been involved in the IUC, including Ph.D. students;
- * meetings with current and former project leaders;
- * on-site campus visits to UoN facilities.

A formal debriefing meeting was held on 5 February 2009, which was attended by representatives from UoN, the Flemish universities as well as VLIR-UOS.

Self assessment forms

The forms were not available to the evaluation commission before the start of the evaluation exercise, although sent to the project leaders weeks before. Forms were provided for the Reproductive Health/HIV and Open Learning projects only. The evaluation commission was made to understand that the persons who were expected to prepare them were too busy or did not take the exercise seriously.

Document review

In preparation for the evaluation, the commission reviewed all available documentation (both paper documents and electronic versions) and financial data on the IUC and UoN. Information on Kenya’s education sector was reviewed as well. An overview of references used is given in Appendix 3.

Interviews

At the UoN, meetings were held with the current rector, project leaders from the University of Nairobi and the Flemish universities, the Programme Manager, (former) Ph.D. students and promoters of research projects funded under the IUC.

In Brussels, the team leader held meetings with staff of VLIR-UOS as well as Flemish project coordinators and experts on 12 January 2009. Appendix 4 provides information on the people with whom interviews were held.



In the interviews a pre-prepared checklist of questions was utilised as well as open-ended questions, based on programme documents and internal assessment forms.

The evaluation commission also attended the 4th programme symposium where various papers were presented by faculty and students as well as academics from Flemish universities. This gave the team opportunity to get additional information from both the team leaders and students.

Evaluation criteria and indicators

In assessing the programme and its constituent projects, the following main criteria were used as per the Terms of Reference:

- * Development relevance;
- * Effectiveness;
- * Efficiency;
- * Sustainability – or ‘(the) continuation of benefits from a development intervention after major development assistance has been completed’² (financial and institutional sustainability);
- * Impact.

Quality was not treated as a separate criterion.

Under the above headings, the evaluation commission looked amongst others into the following issues:

- * Relevance – extent to which the programme and the projects addressed real needs and issues outside the academic community; relationship with relevant development policies.
- * Effectiveness – formulation of objectives and results; outputs realised, and the quality thereof, and related activities.
- * Efficiency – funding of the collaboration activities; use made of the funding; costs and benefits of inputs; programme and project (financial) management.
- * Sustainability – co-funding by the partner university; availability of resources for continuation of operations and maintenance of physical infrastructure; capacity to attract new funds through consultancy and research; staff retention; commitment of Flemish universities to continue the collaboration; continuation perspectives of ongoing research projects; presence and quality of follow-up plans.
- * Impact – (potential) impact at the level of the private sector; involvement in providing policy advice, university wide impact, i.e. outside the faculties in which the programme operated; the extent to which academics, involved in the IUC programme, are called upon by the government for policy advice, etc.

Evaluation limitations

A one-week evaluation mission to assess a 10-year programme is bound to be affected by a lack of time to fully grasp its evolution over the years. Time constraints were compounded by the following factors:

- * the evaluation coincided with the (organisation of the) closing event which was

² Glossary of Key Terms in Evaluation and Results Based Management, 2002, page 36.



held in Naivasha. Travel to the event and the event itself consumed considerable time and affected the interviews that had to take place intermittently during coffee breaks, lunches, etc.;

- * meetings were organised ad hoc and not always with the persons who could shed more light on overall project implementation;
- * no self assessment forms were available in advance – some were simply not provided at all. Though data on finances and equipment were provided, no quantitative data on numbers of fellowships, research publications, etc. was available, forcing the evaluation commission to attempt to distil information from the various annual activity reports, the quality of which was at times limited. Getting factual data on accomplishments was difficult as a result; this may account for some missing data in the presentations of the various projects;
- * more than three months after completion of the assignment in Kenya, feedback on the draft evaluation report was only received from the Belgian team leaders of the HIV/RH and Aqua projects together with observations and suggestions from VLIR-UOS.

Kenya: socio-economic and (higher) education context



Contextual Setting

The Republic of Kenya lies astride the Equator in Eastern Africa with a coastline of about 1000 km of the Indian Ocean. The country is bordered to the north-east by Somalia, to the north by Ethiopia and Sudan, to the west by Uganda and to the south-east by Tanzania.

The total surface area is 582,647 km² comprising 569,297 km² of land and 13,350 km² of open water. Altitude plays an important role in Kenya's climatic patterns of human settlement and agricultural activities. The country has unusually diverse physical environment, including savanna grasslands and woodlands, tropical rain forest and semi-desert environments. Approximately 80% of the land area of Kenya is arid or semi-arid, and only 20% is arable. The main climatic feature is the long rainy season from March to May. This is followed by a long dry spell from May to October. Short rains come between October and December.

The 1999 Population Census estimated Kenya's population at 29.5 million people and projected to 30.2 million people by 2001. Currently, the population is estimated to be over 35 million people. According to the same census, Kenya's population lives mainly in the rural areas and only around 20% lives in the urban areas which is concentrated in towns. The per capita income is estimated to be slightly over US\$ 300 and about 56% of the country's population live below the poverty line.

Agriculture is the mainstay of Kenya's economy accounting for 26% of the gross domestic product (GDP). However, its contribution as a source of GDP growth has been declining over the years. For example, it dropped from 17.4% in 2006 to 8.1% in 2007. Manufacturing which is said to account for about 14 % of the GDP has also been on the decline as it was estimated to account for 10% of the GDP during the last five years. The tourism sector has however sustained an upward growth, making it not only a socio-economic driver, but one of the largest categories of international trade. For instance the country earned an estimated Kshs. 65.4 billion in 2007, representing a 16.4% increase over the Kshs. 56.2 billion for 2006 (Republic of Kenya, 2009).

Following the national elections towards the end of 2002, a new national government (NARC government) came to power. The government was keen on economic recovery and reconstruction. Having identified poverty as the main challenge to economic growth in Kenya, it prepared a **Poverty Reduction Strategy Paper** (PRSP) with its implementation strategy, namely; the Medium Term Expenditure Framework. The PRSP is the cornerstone of the long term vision outlined in the **National Poverty Eradication Plan** (NPEP). The NPEP outlined a 15- year timeframe to fight poverty as part of the



Millennium Development Goals (MDGs), one of whose target is to reduce the poverty level by half by 2015. This is a daunting task in view of the deepening poverty. In 1994, for example, it was estimated that 47% of the population were living below the poverty line while by 2000 this figure had risen to 56%. Furthermore, as much as the economy began to grow at the rate of 6% per annum, the new government just like the previous one has been bedeviled by mega corruption and mismanagement of the economy.

✿ Kenya's Education Sector

The Government of Kenya has been committed to the development of education since independence in 1963. Education Sector is managed by the Ministry of Education. Other partners in the development of the sector include parents/communities, private investors and development partners.

The education system is divided into three main sub-sectors including primary education (8 years), secondary education (4 years) and university education (4 years basic bachelors degree). The early childhood education which has been in the hands of the private sector since independence takes about 2-3 years. Technical vocational education and training is another sub-sector within the ministry of education, targeting those who do not continue in the formal education system.

The public expenditure in education is about 40% of the total budget. The government has consistently increased resources allocated to education. For example, the gross total expenditure increased from Ksh 76.7 billion in 2003/04, Ksh 92.4 billion in 2005/06 to Ksh 125.3 billion in 2007/08 reflecting Government commitment to ensuring provision of adequate grants to schools under the Free Primary Education programme and free tuition in Secondary Education.

Pre-primary education

There are about 37,000 registered pre-primary learning institutions, with an enrolment of about 1,691,093 (some 49% girls). There are about 22,147 teachers, 95% of them are female teachers.

Primary Education

There are about 26,104 primary schools. About 30% of these are privately owned. The total primary school enrolment has grown greatly after the introduction of FPE. Currently, it stands at 8.2 million, up from 7.6 million pupils in 2006. Gross enrolment rates (GER) for boys and girls were 110% and 104% respectively. Net enrolment rate (NER) has increased from 86.5 % in 2006 to 91% in 2007. There are about 174,000 teachers of which about 97% are trained. Male teachers constitute 54.3% of the primary school teachers.

Secondary Education

There are about 6,485 secondary schools in the country of which 33% are privately run. The total enrolment increased by 14.6% from 1,030,080 students in 2006 to 1,180,267 in 2007. GER in secondary schools stands at 36.8% (33.3% for girls 40.4% for boys). There are about 45,000 secondary school teachers of whom some 99.5% of trained (graduate and above).



University Education

Since independence in 1963, the provision of higher education in Kenya, as in other African countries, has been subject to the dynamics of a fast changing society. The government has had to demonstrate some commitment to the development of higher education, because of its significance in the production of skilled human resource, including that for other levels of the education system. Society on its part, has demonstrated a great appetite for higher education, especially university education.

University education in Kenya targets the development of both individual students and society. It is expected to contribute to the building of the nation's human resource by producing a cadre of highly qualified personnel. Graduates of the university level are expected to emerge with the production skills necessary for initiating and advancing economic development and; the vision, attitudes and values that form an essential part of the base for translation of material outputs of development into the overall well-being of the population. Therefore, the objectives of university education have been outlined as follows:

- * Develop in students and scholars the ability to think independently, critically and creatively;
- * Adapt, develop, advance, preserve and disseminate knowledge and desirable values and to stimulate intellectual life (including the spirit of services to others);
- * Educate and train the high level human capital needed for accelerating development through industrialization of the economy;
- * Nurture the internalization of universal knowledge, including key technological advances, with a view to harnessing it for national development;
- * Provide though basic and applied research, knowledge, skills and services that help solve the problems facing society;
- * Help create a society in which both merit, based on diverse talents and equity in development are recognized and nurtured; and
- * Inculcate entrepreneurial skills among graduates to enable them build employment opportunities for themselves and others.

There are currently seven public universities in Kenya, namely; University of Nairobi, Moi University, Egerton University, Jomo Kenyatta University of Agriculture and Technology, Maseno University and Masinde Muliro University and several university colleges attached to them. Each of them was established under its own Act of Parliament. This legal status makes each university independent not only from the government, but also from the others. There are also 22 private universities which normally receive accreditation from the Commission for Higher Education (CHE).

In terms of student enrolment in both public and private universities, between 2006/07 and 2007/08 academic years students enrolled in public universities rose by 6.3% from 91,337 to 97,107 students, with the University of Nairobi constituting 26.3%. Students in private accredited universities accounted for 8.9 % of the total students enrolled. The proportion of female students enrolled in the universities was 40.1 % of the total enrolment. Part-time students account for around 41.9% of the total students enrolled in the public universities (Republic of Kenya, 2008).



However, the rapid expansion of university education has been associated with a decline in the relevance and quality of education offered. Most public universities have large numbers of incomplete or partially completed structures. Consequently, there is congestion in science laboratories, workshops, lecture rooms and catering and boarding facilities. Such congestion has had an adverse effect on the quality of teaching and learning. For instance, there are cases in which lecturers have to repeat their lectures to different groups of students or where some students have to listen to lectures through public address systems outside the lecture halls. Further, congestion in halls of residence have led four or more students sharing rooms that were meant for one or two students. Rapid expansion has also led to inadequacies in most teaching and learning technologies, particularly science/technology equipment, consumables and books. Libraries are under-stocked by international university standards. In most libraries a large proportion of the books are old and in some cases the count is outdated and the supply of journals and other scholarly publications from outside Kenya has greatly declined. As a result of this situation students increasingly rely on lectures as their main source of knowledge and an absence of latest scholarly publications, in many departments the quality of post-graduate study and research, through which universities train their staff has declined (Government of Kenya and UNICEF, 1994).

As a result of financial constraints universities are not meeting demands for post-graduate programmes in the country. This is one of the contributing factors towards staff shortages in some of the departments. Furthermore, with the collapse of the economy characterized by inflation in the 1990s, the purchasing power of university salaries declined drastically. This led to many university staff to try to survive by engaging in consultancies or carrying out activities totally unrelated to their profession. University staff gross earning is well below some cadres of the civil service as well as that of the private sector employees. This situation has a serious demoralizing effect on university staff and contributed to a series of strikes by academic staff union. To address some of the challenges that constrain access, equity and quality in university education, the government planned to work with respective university councils, Commission for Higher Education and development partners (Ministry of Education, Science and Technology, 2005).

Data on public expenditure for the different education sub-sectors are provided in table 1 below. The data indicates that the amount spent on university education is relatively limited. For example, in 2007/2008 only 7.3% of development expenditure went to university education compared to 81.6% for primary and 1.5% to secondary education.

RECURRENT EXPENDITURE-					
General Administration and Planning	55,776.74	59,140.80	64,139.32	72,946.86	80,762.52
Pre-Primary Education	5.51	25.66	57	50.45	50.45
Primary Education	5,966.52	6,583.42	7,148.58	7,746.53	7,874.59
Secondary Education	945.42	938.79	2,893.70	1,018.98	7,758.98
Technical Education ¹	1,171.40	1,546.55	1,291.09	2,819.00	2,900.00
Teacher Education	192.83	210.41	177.72	144.87	242.04
Special Education	175.13	209.77	193.14	353.12	407.56
Polytechnic Education ¹	466.01	1,538.20	571.72	567.99	584.40
University Education ¹	7,470.08	9,735.25	11,885.24	14,158.61	11,904.61
Miscellaneous	240.9	311.06	-	-	-
SUB-TOTAL	72,410.54	80,239.91	88,357.51	99,806.41	112,485.15
DEVELOPMENT EXPENDITURE-					
General Administration and Planning	954.99	651	1,705.04	2,630.13	778.39
Pre-Primary Education	362.55	6.6	-	-	-
Primary Education	2,214.10	3,196.90	1,311.60	6,424.16	10,432.86
Secondary Education	151.9	205.5	170	170.00	192.00
Technical Education ¹	4.19	70	185	85.00	85.00
Teacher Education	155.12	80.27	143.50	50.00	193.26
Special Education	-	-	-	-	180.00
Polytechnic Education ¹	-	-	-	-	-
University Education ¹	471.4	560.2	487.70	661.50	937.50
SUB-TOTAL	4,314.25	4,770.47	4,002.84	10,020.78	12,799.15
GROSS TOTAL EXPENDITURE	76,724.79	85,010.38	92,360.35	109,827.19	125,284.15

Source: Ministry of Education

* Provisional.

** Includes salaries for primary, secondary and teacher training colleges

+ Revised estimates

¹ Ministry of Education Expenditure includes expenditure on university, technical and polytechnic education currently under the ministry of Higher Education, Science and Technology.



The University of Nairobi



General

The University of Nairobi was set up by an Act of Parliament in 1st July 1970 and in-augurated on 10 December 1970. In addition to faculties, departments and institutes established under the auspices of the University of East Africa, further developments followed, which included the introduction of Biochemistry in the Faculty of Science, the establishment of a department of Public Health, Pharmacology and Toxicology in the Faculty of Veterinary Medicine. In cooperation with the East African Community, an Institute for Research in Meteorology was established. The institute comprised two departments- one at the University of Nairobi and the other at the East African Meteorological Department at Dagoretti.

In 1974, two departments of Pharmacy and Dentistry were established. These departments were elevated to faculty status in 1996 within the college of Health Sciences. During the same year, the Department of Biochemistry was set up as a service department for all science oriented faculties. In 1985, the Department of Forestry was transferred from the Faculty of Agriculture to become the nucleus for the first academic programme. The department was expanded into a full faculty of Forest Resources and Wildlife Management.

The following have been established at later dates, the Institute of Population Studies and Research Institute, the School of Computing and Informatics, the Institute of Housing and Building Research, the Institute of Nuclear Science and the Institute of Dryland Development and Utilisation.

Under the University of Nairobi 1985 Act of Parliament, six colleges were established within the University. These include:

College of Agriculture and Veterinary Sciences, Kabete Campus: It comprises; Faculty of Agriculture with departments of food technology and nutrition, range management and Faculty of Veterinary Medicine with departments of; veterinary anatomy, animal production, public health, pharmacology and toxicology, clinical studies, and animal physiology.

College of Architecture and Engineering, Main Campus: It comprises; Faculty of Architecture, Design and Development with departments of architecture, building economics and management, design, land development, urban and regional planning and housing and building research institute; Faculty of Engineering with departments of; environmental and biosystems engineering, civil engineering, electrical and electronic engineering, surveying and Institute of Nuclear Science.



College of Biological and Physical Sciences, Chiromo Campus: It comprises the Faculty of Science with departments of; biochemistry, botany, chemistry, geography geology, mathematics, meteorology, physics, zoology and School of Computing and Informatics.

College of Education and External Studies, Kikuyu Campus: It comprises the Faculty of Education with departments of educational foundations, educational administration and planning and educational communication and technology; Faculty of Social Sciences with departments of; studies and economics, geography, history and government, Kiswahili, linguistics and literature, philosophy and religious studies, social education and ethics, psychology, mathematics; and the Faculty of External Studies with the department of distance education.

College of Health Sciences, Kenyatta National Hospital Campus: It comprises, the Faculties of Dental Sciences, Pharmacy and Medicine with departments of community health, diagnostic radiology, human anatomy, medical physiology, human pathology, medical microbiology, medicine, obstetrics, and gynaecology, orthopaedic surgery, paediatrics, surgery, nursing sciences and psychiatry.

College of Humanities and Social Science, Main Campus: It comprises, Faculties of Arts, Commerce and Law with departments of; economics, geography, political science and public administration, history linguistics and African languages, literature, French studies, philosophy, religious studies, sociology, Institutes of Diplomacy and International Studies, African Studies, Development Studies, Population Studies and Research, School of Journalism and University Library Services.

Currently UoN has a total of over 2,000 academic staff. The majority of the academic staff are male. About 300 of the staff are professors. Student enrolment by college (2007/2008) is depicted in the following table.

School of Medicine	716
School of Dental Science	87
School of Pharmacy	214
School of Nursing Science	141
Faculty of Arts	3,111
School of Law	519
School of Economics	329
School of Business	1,146
Institutes of African Studies	466
Faculty of Agriculture	803
Faculty of Vet Medicine	536



School of Computing	128
School of Biological Sciences	200
School of Mathematics	229
School of Physical Sciences	1,287
School of Engineering	1,345
School of the Built Environment	703
School of Art & Design	122

The mission of the University is ‘To provide quality university education and training and to embody the aspirations of the Kenyan people and the global community through creation, preservation, integration, transmission and utilization of knowledge’.

The UoN has developed a five-year Strategic Plan 2008–2013 with the aim of revamping university programmes and making it a world class university. Nine priorities are articulated in the plan as areas of focus. These include: teaching and learning; Innovation, Research & Development and Consultancy; Governance, Leadership and Management; Human Resources, Infrastructure, ICT and Library Services; Partnerships and Linkages; Finance; Student affairs; and Image. Some additional information on the main priority areas is provided below.

Teaching and Learning

Aim is to offer innovative academic programmes with in-built quality assurance. The Plan envisages amongst others a review of academic programmes ‘to ensure relevance and applicability’, the introduction of policies and practices designed to enhance the quality of teaching and learning, improvement of the evaluation and certification system and strengthening and streamlining of postgraduate training and supervision.

Innovation, Research & Development and Consultancy

Aim is to create an enabling environment and policy framework that promotes research, development and other value adding services. The UoN envisages in this respect inter alia the development of a research policy, and the mainstreaming of consultancy into the core business of the University, e.g. through establishing closer links with the public and private sectors.

Governance, Leadership and Management

In Governance, the Plan aims to develop a governance system that effectively serves the University, amongst others through the introduction of enabling regulations, decentralisation of management and a redefinition of the role of subsidiary companies and manage them in line with best business practices. Another aim is to ‘realize a visionary, innovative leadership & management that is visible, open and transparent’ through e.g. leadership development and the implementation of a change management strategy.



Human Resources

In human resources, key aim pursued is to ‘attract, develop and maintain high calibre, qualified staff’. Strategies proposed range from enhancing staff motivation and performance, staff awareness raising on staff policies, rules and regulations, and a review of current recruitment and appointment mechanisms. The Plan furthermore aims to strengthen and sustain implementation of gender, marginalization, HIV/AIDS and disability policies.

Infrastructure, ICT and Library Services

The aims are to provide and maintain adequate state of the art infrastructure that supports the core functions of the university and ‘to maximize student and staff productivity and service delivery, enhance teaching and learning and improve quality of research through ICT’. The University envisages strengthening of University organs responsible for physical planning and development, the preparation of a mid term and long term master plan to guide future infrastructure development, library staff development and the introduction of ‘an evolutionary ICT policy and strategy that is sensitive to emerging technologies and responds to changing needs and practices’. In ICT, attention is furthermore paid to enhancing skills to develop, implement, support and exploit ICT resources more effectively and efficiently and the provision of ‘quality network infrastructure’ and related service delivery and support systems.

Partnerships and Linkages

The Plan envisages amongst others ‘to strengthen the existing partnerships and linkages and develop new ones’, the development of ‘viable University industry linkages in areas of research, development and academic chairs’, strengthening of alumni networks, and the promotion of the ‘accreditation of University programmes by professional bodies’.

As will be evident from the analysis below, the IUC with the University of Nairobi fit-ted very well in this strategy. The five projects have not only laid a good foundation to implement this strategy But it has also contributed to achievement of specific objectives in the strategy (refer to programme achievement section).

❁ Other support:

Basic information on other key donors to UoN was requested to be able to assess also the relationship of other support with the assistance rendered under the VLIR-UOS Programme and how VLIR-UOS support compared with this other support. Despite reminders by e-mail and telephone, this basic information was unfortunately not provided to the evaluation commission.

4

IUC Programme at UoN



General



The IUC Programme at UoN, consisted of two phases, i.e. from 1998 to 2002 and from 2003 to March 2008, and was coordinated by the Vrije Universiteit Brussel (VUB) in Belgium.

Nomination of UoN did not follow the patterns used by VLIR-UOS at present; unlike today, neither the identification of the institution, nor the preparation of the programme and projects went through the rigorous stages, lasting a minimum of a year, and the use of the Project Cycle Management (PCM) approach that characterise the IUC Programme today³.

Phase 1

An agreement was signed between VUB and VLIR-UOS for the 1st phase of the IUC programme with UoN for the period 1998–2002. Depending on obtained results during the 1st phase, a 2nd and final phase could be signed for another period of 5 years (2003–2008). Since the UoN is a complete university, it potentially had access to be a full-fledged IUC.

The 1st phase of the programme comprised the following three projects:

MASCOM	(i) the training of scientific and technical manpower (ii) the pursuit of applied and basic research in marine science. (iii) To offer postgraduate training at M.Sc. and Ph.D level as well as to conduct collaborative research internally, locally, and internationally.
Network	(i) To support the implementation of computing and information infrastructure and operations in line with the University vision, mission and strategies. (ii) To support the University website and University library system. (iii) To develop human resources in line with University Computer Science and Informatics strategic plans. (iv) To start an electronic learning project.
HIV/AIDS	(i) To facilitate university staff training in order to enhance capacity building for the College of Health Sciences, University of Nairobi. (ii) To carry out research in HIV/AIDS with a view to enhance the understanding of its relationship to reproductive health. (iii) To support training at PhD and Masters Degree (graduate) levels in reproductive health related issues.

³ As a result, the 2002 mid-term evaluation report highlights that the evaluators were 'not able to get hold of any IUC programme identification or formulation report or related document' while changes in key project management positions 'have resulted in a loss of institutional memory on the programme'.



A mid-term evaluation was carried out from 20 to 26 September 2002 (Alberto Amaral and Edward Oyugi, “Final Report from the External Evaluation Commission”, September 2002). Key elements of the review are reflected in the project-related chapters below.

Phase 2

Following formal and informal consultations among Kenyan and Flemish stakeholders, an IUC partner programme for the 2nd phase was drafted. This 2nd phase comprises the following projects:

AQUA	UGent	Enhance capacity to manage aquatic resources in Kenya and the East African region Enhance capacity for research and teaching in aquatic ecology and environmental management	(to) make the Faculty of Science, University of Nairobi, a centre of excellence in research and teaching of aquatic ecology
Reproductive Health/HIV	UGent	Strengthen research capacity in HIV/AIDS and Reproductive Health in the University of Nairobi and improve staff capacity building through training at masters and PhD degree levels'	To improve the health of women in Kenya through research on diagnosis and management of cervical cancer. To improve on the control measures for the reduction of HIV transmission in Kenya through research on discordant couples, mucosal immunity and the role of hormonal changes on the transmission of HIV. Reduce the spread of HIV within the University of Nairobi through the establishment of training infrastructure and control programs.
ICT and Digital Library	VUB	to exploit ICT to more efficiently and effectively support teaching, research, learning and extension services in the University'	To provide value-added services in the University ICT network infrastructure, e.g. providing security for equipment, software and data; implement voice/data integration, enhance communication services, etc, To support the recurrent cost of the provision of Internet services To facilitate electronic access to digital information resources To develop a pool of technical experts in the library to manage and sustain digital library services

**Open Learning**

VUB

to make the university of Nairobi's (educational) programs more accessible to the general public and (particularly) to contribute to the socio-economic development of Kenya'.

To enhance the human resource capacity in open learning in priority areas and to enhance open learning infra-structural capacity

Computer science

VUB

Create sustainable Computer Science research capacity and activity at the Institute of Computer Science, University of Nairobi'

Develop and use a clear Computer Science Re-search Policy and Strategy
 Enable Computer Science researchers to regularly access and use Computer Science journals and advanced text-books for their research
 Hold one international Computer Science conference and workshop in East Africa region in the period 2003 to 2008.
 Actively participate in local and international Computer Science networks.
 Create and sustain 3 Active Research groups in Institute of Computer Science University of Nairobi



Programme Management and administration



Management

The evaluation commission observed that the management requirements spelled out in the overall VLIR University Partner Programme (VLIR-UOS) were followed in the implementation of the IUC with the University of Nairobi. Management was divided between VUB, as leading partner in the North and UoN and the following management and coordination systems were put in place:

- * Programme Coordinator – North
- * Programme Coordinator – South
- * Joint Steering Committee (composed of Team Leaders from the Flemish Universities and UoN)
- * Steering Committee – North (composed of Team Leaders – North)
- * Steering Committee – South (Composed of Team Leaders – South).

Grosso modo, this management system was based on the following division of tasks:

- * the implementation of the programme was delegated to the VUB, which functioned as the coordinating university in Flanders. Administratively, the VUB programme coordinator together with the local coordinator at UoN, was responsible for the day-to-day management of programme implementation based on an agreement signed by VUB and VLIR-UOS;
- * UoN also nominated a local coordinator (Programme Coordinator South) who functioned as the key responsible person from the side of the University of Nairobi;
- * at the UoN, a full time professional manager was also hired to support the local coordinator. The manager was financed from the IUC budget.
- * two steering committees were established, one the South and one in the North to coordinate the implementation of a partner programme. On an annual or bi-annual basis, depending upon need, a Joint Steering Committee Meeting was held.

Based on the document reviews and interviews with the programme coordinators (North and South), team leaders and students, the evaluation commission's view is that by and large this management set-up worked sufficiently enough to support the realisation of the various projects.

It is at the same time evident that rather than on formal management structures, the programme has functioned mainly thanks to the commitment and professionalism of



the two programme coordinators who have managed to make things work, despite the bureaucracies at both the UoN and the Flemish side.

At the same time, it should be noted that although according to the Programme Agreement, the Flemish and Local coordinators were jointly responsible for the implementation of the Programme, there are suggestions that the Flemish coordinator may have tended to assume the upper hand, especially in financial matters, one reason being that VUB was responsible for financial management of the funds and reporting to VLIR-UOS. This issue seems to have been understood by the local coordinator who had no problems with the arrangement, despite the fact that it limited local ownership in terms of managerial issues, though there were complaints with respect to the decision made halfway through programme implementation to cut the topping-up allowances. The two coordinators have developed a good rapport and worked together very well; the Flemish coordinator made 4 to 5 trips a year to Nairobi to work together with the local coordinator, both for the ICT components and for managing and coordinating the programme. Both the coordinators enjoyed easy access to UoN top management and the academic staff in the programme.

Nevertheless, management and coordination of the programme have faced some challenges that are also captured by the Mid-term evaluation report, the self assessment reports and during the interviews held in the course of the evaluation. Key challenges have included the following:

- * Insufficient recognition in VLIR-UOS procedures of the fact that the UoN has existing and functional rules and regulations that have been set by the Government and that have to be followed by the local academic institution(s). Thus rules, e.g. procurement and financial management imposed on the local university;
- * Difficulties and delays in receiving money from Brussels. VUB's financial system did not sufficiently take into account the needs of students coming from developing countries;
- * Delay and irregularity of payment of scholarships through UoN's Grants Office;
- * Delay and problems faced in procurement of programme equipment. In some cases, the university system was overlooked and, to have speedy access to the required items, equipment was procured directly from Brussels;
- * Lack of feedback from VLIR-UOS on the annual financial and technical progress reports;
- * Students complained about the lack supervision and that some supervisors were difficult to see;
- * Coordinators complained of too much work on programme management and administration that was not recognized by their universities. The cutting down of the topping up allowances in the course of the Programme has had a demotivating impact;
- * Insufficient attention was paid to documenting project realisations – which translated into somewhat superficial and repetitive progress reports and the absence of several internal assessment reports at the time of the evaluation;
- * The two steering committees could have done better in supervising and taking pro-active decisions about some Ph.D. students' progress in completing their work in time before the completion of the programme. In general, the role of the steering committees seems to have been limited.



VLIR-UOS seems to have been concerned with the management and coordination issues in general and the above complains in particular. VLIR thus put in place two independent commissions:

- * One in December 2003 after the Mid-term Evaluation: “The follow-up mission to the evaluation of the IUC cooperation with the University of Nairobi, Kenya” (December 2003);
- * The second in February 2005: Report of Advisory assignment regarding local management of the Institutional University Cooperation Programme with the University of Nairobi” (7 February 2005).

The conclusions and recommendations of the two reports concurred with the mid-term evaluation report that the management and coordination of the programmes faced challenges which required attention – adjustment in order to make the implementation of the programme efficient.

The evaluation commission notes that although both missions submitted their findings to VLIR, little visible adjustments were made to address the identified challenges. It is our understanding that since the programme and specific projects objectives were being achieved, these challenges were not considered a big threat to the progress realised. It was also interesting to note that one of the commission’s report was seen for the first time by the coordinator south during our discussion with him. The coordinators as well as the team leaders indicated that the management challenges, although real, did not prevent them from doing their work. The coordinator South summarized it as follows during the interviews: ‘the benefits and targetable achievement in the programme outweighed the challenges that we faced. Thus, we decided to continue working ... and accepted that challenges and bottlenecks exist in any programme of such magnitude. So VLIR-UoN programme is not an exception....”

In programme management in the North, the Flemish coordinator has played a key role. Project leaders easily referred to the coordinator to address administrative issues. Irregular steering committee meetings were held – project leaders were often busy; little recording of minutes of these meetings seems to have taken place until the end of the Programme. Particularly during the first five years of the IUC, there was very little support for the coordinator from the ICOS at VUB. This improved somewhat during the 2nd phase but still too limited with the responsible staff member apparently overwhelmed by the administrative tasks related to three IUCs.

Financial Issues

Based on data provided by VLIR-UOS, total expenditure for the programme in the period 1998 to 2006 was some € 5,884,832 – data on 2007 expenditure were not included in the financial overview. This budget covered the costs of investment, operations, personnel, scholarships, international travel, residential and shipping of equipment. The available data indicates for the period 1998–2003, not all expenditures were accepted by DGDC (with a total difference of the equivalent of € 22,955). A comparison of total budget and expenditure by year gives the following picture (data for 1998–2000 converted according to the official exchange of 40.3399 Belgian francs to the Euro).



1998	708,348	708,314	707,536
1999	755,458	755,456	743,034
2000	755,458	755,458	755,458
2001	754,836	744,985	735,619
2002	770,000	660,160	659,771
2003	745,001	713,000	713,000
2004	744,999	361,350	n.a
2005	635,001	634,997	n.a
2006	552,620	551,112	n.a
2007	374,999	n.a.	n.a
Total	6,796,720	5,884,832	

Financial data provided by VUB differ from those provided by VLIR-UOS. Using these data, a comparison of total budget and total expenditure per project (see table 4), with the projects OPLN and COSC coming in in the 2nd phase only, indicates that expenditures on ICT (network, library) have exceeded the original budget allocated by 12.7%. Similarly, expenditures for Open Learning exceeded what was originally granted. The other three projects have received less than was planned.

	Budget	Expenditure North	Expenditure South	Total expenditure	Difference expenditure/ budget
HIV/RH	1,101,661	424,340	530,386	954,725	86.7%
MOSCAM/Aqua	1,842,659	434,414	1,306,241	1,740,654	94.5%
NET/Lib	2,108,477	695,975	1,680,176	2,376,151	112.7%
OPLN	425,130	274,448	184,591	459,038	108.0%
COSC	337,481	227,392	102,285	329,678	97.7%

The data available furthermore confirms that the bulk of the financial resources (about 65 per cent) were spent in the South in each of the projects.

The evaluation team established that the stakeholders in the North and South were satisfied on the way the programme money was used. There were no cases of fraud or lack of transparency reported. All the stakeholders talked to, those in the south in particular, indicated that this was a worth investment to the university and faculty.

Table 5 indicates the shares of the budget spent on investments (equipments), scholarships and operations costs as a proportion of total amount expended in the programme. The investment costs were high in NET/ILIB, MASCOM/AQUA and COSC, with 44.4%, 35.6% and 31.8% respectively of the budget used for investment purposes. The investment cost in OPLN equaled 24.6% of expenditures. The remainder of the budget covered personnel, international travels and residential costs.



Project	Investment costs	Scholarship costs	Operational costs
HIV/RH	16.9%	28.9%	39.4%
MASCOM/AQUA	35.6%	31.7%	25.6%
NET/ILIB	44.4%	11.5%	39.8%
COSC (2003-2007)	31.8%	31.7%	17.9%
OPLN (2003-2007)	24.6%	21.0%	40.0%

The high share of operational costs for the HIV/RH project relates to the high costs of the tests undertaken on behalf of the Ph.D. students and high costs of reagents needed for their research; in the case of the NET/ILIB project, a considerable amount of money was spent on Internet access.

The evaluation team was shown some of the equipment during its site visits. The team is satisfied that the items provided are useful asset to the UoN in general and specific colleges/schools in particular.

In MASCOM/AQUA, COSC and HIV/RH projects the amounts used for scholarships as a percentage of total expended in each project was 31.7%, 31.7% and 28.9% respectively. In OPLN and NET/ILIB the proportion is 21% and 11.5%. Scholarship costs reflect the number of students sponsored for masters and Ph.D. under each project.



MASCOM and AQUA projects



Phase 1 - the MASCOM project

The MASCOM (=Marine Science and Coastal Zone Management) project of the 1st phase aimed 'to create a better understanding of the tropical environmental processes at the Kenyan Coast and to improve the management of the Marine resources by means of research for sustainable development and enhancement of capacity building' (MTR, page 29). According to the same source, MASCOM was designed as a capacity-building project with three key thrusts: (i) the training of scientific and technical manpower; (ii) the pursuit of applied and basic research in marine science and (iii) postgraduate training at M.Sc. and Ph.D. level as well as to conduct collaborative research internally, locally, and internationally. The MTR (page 29–31) and project proposal document (page 1) refer to the following realisations for MASCOM:

- * Human Resource Development – 10 students were trained to M.Sc. level, eight of whom have passed and two still have to complete their thesis, and 4 were trained at Ph.D level of which one was discontinued⁴. One technical staff was trained and promoted to Chief Technologist and attached to the VLIR Project⁵.
- * A Project Administrative Secretary obtained a Diploma in Management and one Driver was hired and 'polished' as a driver for the MASCOM Project.
- * A Hydrobiology course was developed in 2002 and by the end of the 1st phase, several papers (M.Sc. and Ph.D. thesis) were in preparation for publications.
- * In terms of infrastructure, rehabilitation of the Moana Marine station was completed; the station was inaugurated in September 2001. Equipment provided included 2 LCD digital cameras, 10 computers, 1 video camera, 1 scanner, 2 printers, laboratory equipment for the aquatic laboratory in the Department of Zoology, 2 project vehicles and an assortment of field equipment (boats, computers, etc.).

Concerns expressed in the MTR report are in particular the following:

- * while there 'will be more M.Sc. students in the years to come, as the M.Sc. programme is now part of the UoN parallel system', 'some of those who have completed their M.Sc degree work are uncertain about their possible employment in the UoN' (page 31)⁶;

⁴ Dr. Johnson Kitheka, graduated in 2005 and is presently, Programme officer at UNEP; Dr. Edward Kimani, graduated in 2006 and is working with KMFRI, Mombasa, Dr. Abdirahaman Kulmiye, a Somali national, graduated in 2006 and migrated to Australia.

⁵ Discussions were held during AP 2003 with the Zoology Department to second a technician to the project as soon as possible; intention was to train this technician in aqua laboratory technology. It is not clear what happened in this case.

⁶ The project proposal document (page 1) observed: 'The Marine Biology Programme in phase I of VLIR experienced a major problem by failing to integrate itself in the overall Hydrobiology Programme in the Zoology Department. This caused staff apathy and non-cooperation in student selection, teaching and execution of the overall research programme. This is probably one of the reasons why the VLIR students did not fit in the tenet of the staff development programme of the department. The programme management was individually driven with very little consultation at the department level. This has affected student supervision and the collaboration with Belgian and other Kenyan stakeholders'. According to the same source: 'It is important to note that none of these trainees were in the staff development programme of the University of Nairobi' (and) that 'none of the post graduates students trained in phase I were employees of the University but belonged to other institutions' (page 1).



- * research output has been poor (i.e. ‘not a single scientific paper’) and ‘apparently there are no research projects in cooperation with Belgium academics, one reason apparently being ‘the lack of interest of the Belgium promoter’, others being ‘the departure of different key stakeholders’, and ‘difficult per-sonal relations’ (page 39);
- * the Moana facility, which was rehabilitated ‘but as it stands it is only a “hotel/conference facility”, without any equipment or resources for research. The equipment that the project has acquired with VLIR’s funding is until the present date concentrated in the UoN’s Chiromo campus’. ‘At present, Moana does not give students an appropriate basis for their field work when combined with at least some of the more trivial analysis, and the seminars that were promoted there could be held at UoN with lower costs. It is also obvious that Moana will never be a success without appropriate management *in situ*’ (page 39);
- * ‘some difficulties in the cooperation of UoN with KMFRI at Mombasa and some students and other stakeholders referred to them’ – partly because ‘KMFRI still looks at the VLIR-IUC-UoN programme as having stolen cooperation with Belgian scientists away from them, while depriving them of a valuable source of funds’ (page 39);
- * with respect to project organisation and planning, the report refers amongst others to ‘the accumulation of functions of the overall programme coordinator and project coordinator’, and little Ph.D. supervision;
- * the MTR also questioned sustainability of the undertaking and the future of the research⁷.

The MTR made the following recommendations: (a) separate project coordination from programme coordination ‘to allow for a better distribution of the workload, as well as for transparent relationships between the different functions’ (page 39); (b) ‘there needs to be a sizeable team of Belgian researchers fully committed to the co-operation within the MASCOM framework’ (page 46) as well as a fully committed promoter and spokesman’ (page 47); (c) a MoU needs to be signed with KMFRI to facilitate the relationship between the two institutions; (d) the UoN needs to ensure that the selection procedures for postgraduate students are ‘adequate’ and to ‘clar-ify the situation of those Ph.D. students that have declared their conviction that ob-taining that degree will be almost impossible’ (page 47); (e) the UoN needs to clarify the situation of the Moana station ‘in order to ensure that it is a viable investment and to clarify the use of laboratory equipment in field work’ (page 47).

❁ Phase 2: The AQUA project

General

Overall objectives, according to the project’s logical framework read as: (a) ‘Enhance capacity to manage aquatic resources in Kenya and the East African region’ and (b) ‘Enhance capacity for research and teaching in aquatic ecology and environmental management’. The project’s specific objective was ‘(to) make the Faculty of Science, University of Nairobi, a centre of excellence in research and teaching of aquatic ecology’⁸ with research focusing on mangrove ecosystem dynamics and functional relationships. According to the logical framework, results expected were the following:

⁷ ‘It is a fact that the M.Sc. is now part of the parallel programme of UoN, but without the continuation or replacement of VLIR’s support it is difficult to see how field research can be carried out at its present costs, and so far no additional funding from other sources – including the university – has been made available’ (page 40). The situation is reinforced by the ‘lack of clear institutional support from Belgian universities’ and the absence of ‘any visible expression of mutual interest that might raise some hope about the project’s institutional sustainability’ (page 40).

⁸ Project proposal, page 5. According to the Annual Activity Report on 2003, the specific objective is ‘to make the Faculty of Science, University of Nairobi to become the Centre of excellence in research and teaching aquatic ecology’ (page 7) with the research ‘built around a tropical mangrove ecosystem dynamics and functional relationship of the various components’ (page 7).



- * strong research and teaching team on aquatic sciences employed at UoN;
- * the UoN delivers an International Postgraduate programme on Aquatic Science;
- * strong collaboration at research level between partner countries with an increased scientific output (knowledge) for both side. Research results will be presented during an International Conference organised at the end of the second phase;
- * researchers at UoN are actively engaging in research;
- * communities (from primary school up to the community level) are informed on ongoing marine research in their living environment and discuss possible remediation in case of present threats for the environment.

In terms of project activities, these can be subdivided under the following main headings:

- * **Project management** (establishment and meetings of project implementation committee with members from different departments as ‘a means to monitor and improve the level of collaboration and trust amongst stakeholders from different department involved in the project’ (Project proposal, page 9) as well as PCM training.
- * **Staff development** – the project would render support to four new Ph.D. students and 3 Ph.D. students from the first phase in marine and freshwater science in the Department of Zoology. The students were to ‘be provided with financial support in the framework of capacity building for the university. Their research will be re-directed and strengthened to be in line with the tenets of the overall Aquatic Ecology project’. The project also intended to train two technicians in aquatic techniques and methodology.
- * **Teaching development** – intention was to review and update the ‘Postgraduate Aquatic Science Programme to meet international standards and expectations and thereby attract international students’ (page 9). Expectations were that eventually some 30% of students would come from abroad and that ‘(the) new curriculum, if implemented successfully, should be self-sustaining from fees paid by students’ (page 13).
- * **Research** – implementation of a ‘joint Kenya-Belgium research programme on ‘Assessment of the role of ecological relationships in tropical marine ecosystems in maintaining coastal biodiversity in Kenya’; establishment of an electronic database of Kenyan coastal biodiversity and publication of a book on ‘Aquatic Resources of Kenya’.
- * **Improvement teaching/research infrastructure:** procurement of computers/accessories, GIS software, laboratory equipment and sampling gear as well as ‘relevant literature should read ... to build an up-to-date Aquatic Science Library within the Department of Zoology’.
- * **Dissemination of research findings:** joint publications in peer-reviewed journals; presentations in local, regional and international forums; organisation of an International Conference on ‘Sustainable Utilisation of the Biodiversity in Tropical Marine Ecosystems’; funding of conference attendance of Kenyan Ph.D. researchers; organisation of national workshops on taxonomic techniques and the use of digital databases in biodiversity research.



- * **Outreach and linkages**, i.e. the creation of ‘linkages to the VLIR-IUC-UON programme with a view to expand the networking and acquire possible further funding’; environmental awareness forums and information to and involvement of local communities ‘on ongoing marine research in their living environment and discuss possible remediation in case of present threats for the environment’.

Realisations

General

During AP 2003 the Aqua project went through two teething problems:

- * difficulties to ‘get on board Belgian participation as promoters in the research and training activities’, partly due to ‘old relations’ from the MASCOM project, partly also because mangrove related research was not a high priority in Flemish universities⁹. Moreover, since the Ph.D. students graduate at the UoN, Belgian promoters are not on the diplomas and they do not ‘count’ in Belgium (no support from the University, etc.). The situation appears to have improved over time, with several academics from Flemish universities involved in the research and Ph.D. student supervision;
- * difficulties in recruitment of students from UoN, because of the ‘requirement that prospective Ph.D. candidates had to have a position in the University as Tutorial Fellows to qualify for a scholarship’ and it took time to recruit suitable candidates (see below).

Staff development

The overview below summarises the evaluation’s findings with respect to the Ph.Ds funded during the 2nd phase (each receiving some Kshs 150,000 to support their research):

- * Arrumm, A., Ph.D. topic: A comparative study of the biology of the tilapiine fishes in Lake Kanyaboli, Kenya. Current position: Assistant lecturer, School of Biological Sciences of UoN, recruited during the 1st phase. Supervisors: Prof. Ann Vanreusel (UGent), Prof. M.J. Ntiba and Prof. Dr. K.M.Mavuti (UoN). Status: unknown to the evaluation commission.
- * Ogony, D., Ph.D. topic: Investigations into the biology of *Labeo cylindricus Peters*, (*Pisces: cyprinidae*) and the potential for commercial culture. Position: Hydrobiology Ph.D. student of the Department of Zoology, recruited during the 1st phase. Supervisors: Prof. M.J. Ntiba (UoN) and Prof. Dr. K.M.Mavuti (UoN). Status: unknown to the evaluation commission.
- * Sigana, D.O., Ph.D. topic: The biology of the fish of the family Mugillidae at Kilifi, a tropical mangrove creek at the Kenya coasts. Position: Assistant Lecturer, School of Biological Sciences (SBS), recruited during the 1st phase. Supervisors: Prof. Ann Vanreusel (UGent), Prof. M.J. Ntiba and Prof. Dr. K.M. Mavuti (UoN). Status: Thesis submitted.
- * Nyunia, J. A., Ph.D. topic: Demersal Fish Communities and Food web Relationships in a Mangrove – Fringed Estuary, Gazi Bay, Kenya. Position: employed at KMFRI. Supervisors: Dr. Onyari and Prof. K.M. Mavuti (UoN) and Prof. Dr. Steve Bouillon. Status: Completed, submitted thesis, awaiting examination.
- * Wangonde, V., Ph.D. topic: Phenology of *Rhizophora mucronata L.*, *Avicennia Marina (Forsk.) Vierh.* and *Sonneratia alba Sm.* Position: Employed at UoN. Supervisors:

⁹ The AAR 2003 reports in this respect: ‘Only Ann Vanreusel has made a substantive and serious visit to Kenya from Belgium - mainly on project administrative matters and also on benthos research ... Other Belgian promoters are invited and encouraged to come to the University of Nairobi and Kenya ...’ (page 11). Again, in AAP2004 it was noted (page 8): ‘We shall still expect more active participation from the Belgian supervisors’.



Prof. J I. Kinyamario (UoN), Prof. Dr. Farid Dahdouh Guebas (VUB), Prof. Nico Koedam and Dr. Kairo (KMFRI). Status: Preparing to submit in 2009.

- * Lumumba, P., Ph.D. topic: The Exclusive Economic zone: A Study of the Approaches for its Management, Utilization and Control with Specific reference to the Kenyan Exclusive Economic zone. Position: Assistant lecturer, Faculty of Law, UoN. Supervisors: Status: Graduated.
- * Mutua, A., Ph.D. topic: Benthos associated with mangroves in different stages of degradation and regeneration. Position: ¹⁰. Supervisors: Prof. Ann Vanreusel (UGent), Prof. M. Ntiba and Dr. Agnes Muthumbi (UoN). Status: Preparing to submit in 2009.
- * Kones, J., Ph.D. topic: Ecosystem modeling of Gazi Creek. Position: Left UoN to become Member of Parliament. Supervisors: Prof. Dr Karline Soetaert (UGent and NIOO), Prof. Owino and Prof. M.J. Ntiba (UoN). Prof. Dr. K.M. Mavuti (UoN). Status: Ongoing¹¹.

The fellowships of A. Muohi (who took up a DAAD fellowship in 2004) and G. Boss were discontinued.

An M.Sc. student (F. Mwonjoria) attended a 1-month benthos course at UGent during AP 2003 to finalise his degree. He graduated in September 2006 with an M.Sc. study 'Fish and benthic communities as indicators of the status of *Sonneratia alba* mangrove habitats in Gazi Bay'.

A workshop on computer applications and techniques by the ICT and Computer Science was planned but did not materialise during AP 2003. The same is true for training on PCM that was foreseen. It is not clear what has happened with this training.

Research

The research was built around a tropical mangrove ecosystem dynamics and functional relationship of the various components and was primarily 'associated' with the various Ph.D. students, as follows:

- * Stable Isotope studies 'which will lead to unravelling food chain/web linkages between mangroves, sea grass beds and coral reefs at the Kenyan coast' (AAR 2006, page 7): linked with the aspects of fisheries, benthos and mangrove studies led by Dr. Onyari (UoN), Prof. Ken Mavuti (UoN) and Prof. Dr. Steve Bouillon associated with the Ph.D. study by Mrs. Judith Nyunja (KMFRI). Prof. M.J. Ntiba (UoN) joined in AP 2004.
- * Benthos research: led by Prof. Ann Vanreusel (UGent), Dr. Agnes Muthumbi (UoN) and Prof. M.J. Ntiba (UoN), associated with the Ph.D. study by Amos Mutua on the benthos associated with mangroves in different stages of degradation and regeneration.
- * Botanical mangrove aspects: led by Prof. J I. Kinyamario (UoN), Prof. Farid Dahdouh Guebas (VUB) and Dr. Kairo (KMFRI) associated with the Ph.D. study of V. Wangonde (on: *Phenology of Rhizophora mucronata L., Avicennia Marina (Forsk.) Vierh. and Sonneratia alba Sm.*). During AP 2004, Prof. F. Mwaurra joined the team.
- * Modelling the mangrove ecosystem interrelationship of the various component dynamics on fisheries, benthos, mangrove trees biology and trophic interrela-

¹⁰ Though not employed by UoN (and unemployed well into AP2006), the incumbent was selected for the following reasons: AAR 2003, page 41: we needed also research in the benthic field in order to achieve our global research objectives, in which the Belgian project leader was also interested; The candidate chosen was trained during the first phase (valorisation of previous investments); The person was not really employed by the UoN, but was finalising work in the frame of another project'.

¹¹ Although the incumbent did not complete his Ph.D. yet, he managed to get two articles published. He was originally employed by UoN and started a 2-months training in Belgium early March 2004 (training in marine ecology principles and ecosystem modelling).



tionship: Ph.D. study by Mr. K. Kipyegon Kones with as promoters Prof. Dr Karline Soetaert (UGent and NIOO), Prof. Owino (UoN) and Prof. M.J. Ntiba (UoN). Prof. Dr. K.M. Mavuti (UoN) joined during AP 2004.

An overview of publications realised is provided in Appendix 5.

In terms of database development, a decision was made during AP2003 'to concentrate our effort on updating existing databases on Marine East African biodiversity'. Potential partners in this undertaking were KMFR I and the National Museum of Kenya. The idea was also to link up with the Global Taxonomy Initiative. AAR2006 still reports (page 9): 'complete the process of establishing an archival information and biodiversity database(s) in the School of Biological Sciences as a output of the Aqua project'. It is understood that a Belgian expert came to Nairobi to support the database development process but that apparently little follow-up was given. It is moreover not evident whether this database was indeed a real priority and/or what its added value would be.

Teaching development

A workshop was held in Mombasa in January 2004 to review the post-graduate aquatic science programme. According to the AAR2005 also during AP2005 'workshops to discuss the programme and to strategize its place in the School (were) held' (page 7) and new course descriptions were ongoing. The AAR2006 reported as follows: 'Informal discussions and inputs have been going on and strategies are now in place to start two B.Sc. courses in Fisheries Science and Aquatic Environment Conservation to support the Masters programme in Hydrobiology'. These courses were 'to be discussed in School of Biological Sciences Academic Board and to be approved by University Senate for implementation' (page 6-7).

It is understood that a syllabus on Aquaculture for an M.Sc. on Hydrobiology was developed; however, it is realised that post-graduate students from the region are reluctant to pursue their studies at African universities. In the end, the programme was not undertaken due to a lack of students. It is also understood that a draft manual for Distance Learning on 'Freshwater and Marine Biology' was prepared; it is unclear whether this was done within the framework of the project.

Improvement of teaching/research infrastructure

Overall, since 1998 a total amount of € 618,958 has been invested to improve the University's teaching and learning infrastructure (lab facilities in Nairobi and Moana) of which € 124,253 during the 2nd phase of the IUC. During the 2nd phase, investments included: 4 laptops, 1 table top computer, 'ecological' software, 1 LCD projector, a digital camera, AAS300, centrifuge, 1 LCD, 1 slide projector, 1 photocopier, microscopes, centrifuge, printers, assorted chemicals, a marine boat, fridge, etc. Sampling stations were set up at Gazi, Moana and Tiwi for 'permanent research on biodiversity changes and climate change'. During AP2006 a fume cupboard at the lab facilities in Moana were repaired. Unfortunately, AAR2004 reports (page 8): 'Procurement is still a big headache in the University where the Procurement Section still does not seem to understand it has a facilitating role to the overall mandate of the University's teaching and research mandates'.



Dissemination

A start was made with the manuscript of the book 'Aquatic Resources of Kenya' during AP2003. However, with the nomination of the former project leader as PS, it is unlikely that the book will be published in the immediate future.

A first 2-day planning meeting for the International Conference on "Sustaining the Biodiversity in Tropical Marine Ecosystems" held in January 2004 in Mombasa. Moreover during AP2004 a workshop on Taxonomy and Biodiversity was held (with the workshop report published in AP2006). Planning for an Aqua Symposium started during AP2005, and, according to AAR2006 continued during AP2006. In AP2006 an International Symposium on "Advances in Tropical Aquatic Science" was held; the symposium report was being edited.

Conference attendance of one scientist was sponsored during AP2003 (Australia). Also during subsequent years did researchers and students (participate) in international conferences and presented scientific papers.

Outreach

Some links were developed with Fisheries Department, Kenyatta and Moi University, KMFRI, WIOMSA, UNEP, NEMA and UNESCO. A Memorandum of Understanding was signed in the course of AP2006 with KMFRI. Apart from some small initiatives undertaken by KMFRI, there appears to have been little outreach to the communities in the research area.

Assessment

Relevance

It is understood that the (Ph.D.) research themes were relevant in the Kenyan context. Moreover, they reflected the research interests of the Flemish promoters; this, eventually, helped to ensure their increased involvement in undertaking and supervising the research and the Ph.D. students. Discussions with team leaders and students indicated that the research themes fitted within KMFRI and Faculty of Science research agenda.

Effectiveness

To a certain extent, the project has been able to realise its aims of capacity building, improving teaching and research infrastructure and in terms of Ph.D. research. In terms of capacity building, it is at the same observed that capacity building for the UoN as such has been relatively limited: quite a number of Ph.D. students/graduates are currently employed outside the University, or even outside the country. It has proven less effective in terms of e.g. developing and undertaking an international programme, database development as well as outreach outside the academic community in terms of 'environmental awareness forums and information to and involvement of local communities 'on ongoing marine research in their living environment and discuss possible remediation in case of present threats for the environment' as was originally foreseen. The information available also indicates that it was less effective in undertaking joint research and realising joint Belgian-Kenyan publications.



Efficiency

Project efficiency was affected by (a) delays in getting Flemish academics on board and effectively participate in project activities; (b) delays and complications experienced in procurement of equipment. Completion of Ph.D. studies has been time consuming in the 2nd phase. Consistent reporting on project activities was furthermore limited.

Sustainability

There are indications that there continues to be an interest in the Flemish academic community to collaborate with Kenya in marine research; there seems however a move towards working with KMFRI rather than the University of Nairobi in this respect. It appears that it will not be easy for the UoN itself to continue the various types of research on its own, with the limited research funds it has, though more links appear to have been established with institutions from the region that would allow collaborative research work.

Impact

The evaluation commission is not in a position to give a well-founded opinion on the (potential) impact, as defined in chapter 1 above. At best, any such impact has been very limited to date.

STD/HIV and Reproductive Health



Phase 1: STD/HIV project

The STD/HIV project is the continuation of previous cooperation between the UoN (Department of Microbiology, Faculty of Medicine, designated as World Health Organization Collaborating Centre for Research and Training for STD) and UGent (International Centre for Reproductive Health, Department of Gynecology and Obstetrics) in research and training in the area of STDs and AIDS since 1992.

Main objective of the 1st Phase of the STD/HIV project was according to the MTR (page 32) to strengthen staff capacity building for the UoN to ‘improve the teaching and research in HIV/AIDS and Reproductive Health’. The project also encompassed research ‘to seek solutions to unanswered scientific questions concerning HIV/AIDS and ‘its relationship to reproductive health’ (page 33) through the recruitment of one Ph.D. student (cervical cancer) and 3 Masters of Public Health (MPH) students to work on Reproductive Health related topics (Reproductive health morbidity patterns among adolescents, voluntary counselling and acceptability of prenatal HIV testing; and infant feeding practices and prevention of mother to child transmission of HIV). In terms of specific realisations, the Review refers to (page 33):

- * Academic staff development: 3 (1 PhD, 2 MPH); 1 technician in HPV/PCR diagnosis; 1 Component promoter;
- * Teaching: 40 Kenyans certified in research methods; 3 degree level; 1 research methodology course; Computer reference lab;
- * Research: 1 PhD student/staff; 1 publication¹² and 1 contribution to an international conference¹³;
- * Infrastructure and equipment: Development of HPV/ PCR laboratory; LCD digital camera; PCR thermocycler;
- * Outreach: policy advice to the Kenyan Ministry of Health regarding cervical cancer screening for in-patients;
- * Management: new procedures in HPV/PCR testing.

The MTR was positive about the project, as ‘(so) far it seems to be attaining all its objectives within a rather small budget’, it is visible due to its focus on a very specific problem, and has relatively better research productivity. Moreover (page 41), it ‘fits into the efforts being developed by the international research community in trying to solve this real calamity for public health’. Amidst a range of other international institutions (e.g. University of Manitoba and Washington University) working at the Department, there was still a niche for the VLIR project because (page 40) of ‘the fact that the VLIR project by addressing the “reproductive health” aspect – the problem of AIDS transmission from mother to child – assumes a unique and important role among the other

¹² Gichangi P, De Vuyst H, Estambale B, Rogo K, Bwayo J, Temmerman M. HIV and Cervical cancer in Kenya. *Int J Gynaecol Obstet* 2002 Jan; 76(1): 55-63

¹³ 10th International congress on infectious diseases, March 11-14, 2002 in Singapore. Gichangi P, Bwayo J, Estambale B, Ojwang S, Vuyst H, Temmerman M, 2002. HIV infection and invasive cervical cancer in Kenya. 10th International congress on infectious disease (Abstract 64.021)



major projects that aim at other different problems. The MTR gave high scores for project quality, effectiveness, impact and development relevance and recommended that it be continued, taking into account the following recommendations (page 46): i) the STD/HIV Belgian promoter needs to involve more Belgian researchers in the project in order to promote its sustainability; ii) the STD/HIV promoters should make clear the feasibility of its policy recommendation on cervical cancer screening; iii) the STD/HIV promoters should indicate possible sources for alternative funding allowing for the continuation of the project after the end of phase 2. According to the MTR document '(in) principle it should not be difficult to ensure the project's sustainability once the VLIR-IUC programme comes to an end. On the one hand it seems natural that increased funds will become available for the fight against AIDS, and on the other hand there are well established relationships with Belgian scientists'.

❁ Phase 2: Reproductive Health and HIV

General

According to the project description (page 4) the project's academic overall objective reads as: 'To carry out research and teaching of cervical cancer and its relation to human immunodeficiency virus in order to improve on its management (diagnosis and treatment)' and its developmental overall objective as 'To enhance the health status of women of reproductive age in order to prolong their life expectancy'¹⁴. During AP2003, this overall objective was changed into 'Strengthen research capacity in HIV/AIDS and Reproductive Health in the University of Nairobi and improve staff capacity building through training at masters and PhD degree levels' (AAR2003, page 3).

According to the project description document, the project's specific objective is¹⁵: 'An understanding of the interaction between human immunodeficiency virus (HIV) and human papilloma virus (HPV) and cervical cancer; and the impact of highly active antiretroviral treatment (HAART) on HIV/HPV and cervical cancer is to be determined'. In the AAR2003 (page 3), the specific objectives were reformulated as follows:

1. To improve the health of women in Kenya through research on diagnosis and management of cervical cancer.
2. To improve on the control measures for the reduction of HIV transmission in Kenya through research on discordant couples, mucosal immunity and the role of hormonal changes on the transmission of HIV.
3. Reduce the spread of HIV within the University of Nairobi through the establishment of training infrastructure and control programs.

In terms of intermediate results, the project document refers to (page 4):

- * Fully functional and sustainable immunological/virological/HPV laboratory.
- * Efficient administrative/financial and scientific management of the project.
- * A well established community based cohort of young women, to which the following scientific research is applied:

¹⁴ This is somewhat different from the formulation in the logical framework where the overall objectives are: (1) Women's health in Kenya has been improved; (2) Experts in management (diagnosis and treatment) and teaching of cervical cancer in the university has been improved; (3) Improved control measures for reduction of HIV transmission in Kenya; (4) Strengthened research and teaching capacity for management of HIV/AIDS; (5) HIV/AIDS spread within the University of Nairobi community is reduced; The capacity of the University of Nairobi to deal with HIV/AIDS spread is strengthened.

¹⁵ Immediate objectives mentioned in the logical framework are the following: A clear understanding of the interaction between HIV and HPV and cervical cancer and the impact of HAART on HIV/HPV and cervical cancer will be achieved; Research results in the area of HIV transmission in discordant couples and barrier methods have been obtained; The University of Nairobi has a well established and running HIV/AIDS control programme.



- * Study results on HPV sero-prevalence in the cohort.
- * Study results on the interaction of HIV-HPV and cervical cancer.
- * Study results on treatment of pre-/invasive cervical cancer.
- * Study results on clinical trial of radiation dosages for treatment of cervical cancer with concurrent HIV infection.
- * Study results on the use of HAART on pre-invasive cervical cancer treatment.

Moreover, the project documentation provides a series of overall and specific objectives as well as results that are directly related to the following specific research topics (for which Ph.D. students were to be recruited) and one specific area of intervention, i.e.:

- * cervical cancer management in Kenya: measures for improving early diagnosis and treatment;
- * determinants of heterosexual transmission of HIV in Kenya;
- * HIV/AIDS at the University of Nairobi.

Implementation¹⁶

General - Ph.D. students

The project started off in April 2003 with identifying research activities to be carried out during the next five years of the phase. Proposals were written and two Ph.D. students identified to lead the research activities. During AP2003 a start was also made with getting ethical approvals, equipment acquisition, study site selection and equipping the laboratory in preparation for specimen handling and processing¹⁷. Tigon District Hospital was formally established as a training and research outreach site for the College of Health Sciences through the signing of Memorandum of understanding with the Ministry of Health and University of Nairobi.

During AP2003, one Ph.D. student dropped out forcing the project to re-advertise; because of favourable exchange rates, it was possible to select two more Ph.D. students giving a total of 3, each with her/his specific topic and team of supervisors, i.e.:

- * Dr. Lucy Muchiri, employed at the Human Pathology Department of the School of Medicine (unit of Anatomic Pathology). Ph.D. topic: The Impact of HIV infection on cervical neoplasia in a Kenyan peri-urban population. Main objective of the study was 'To study the impact of HIV infection on cervical neoplasia in a Kenyan peri-urban population'¹⁸. Supervisors are Dr. Peter Gichangi, Prof. B. Estambale, Prof. C. Kigundu, and Prof. M. Temmerman. The Ph.D. proposal was approved during AP2003 with start of the research in 2004. It is understood that the Ph.D. student will defend her Ph.D. by mid-May 2009.
- * Dr. Chris Gontier, employed at the Human Pathology Department of the School of Medicine. Ph.D. topics: The role of endogenous and exogenous female sex hormones on HIV-1 shedding. Main objective of the study is: To study the role of female sex hormones (oestrogen, progesterone and testosterone) in HIV-1 shedding in the female genital tract in natural menstrual cycles and in menstrual cycles

¹⁶ The Annual Activity Reports primarily describe the progress realised by the three Ph.D. students in the project; other information on project support is scarce. The evaluation commission has refrained from summarising the details of the progress of the individual Ph.D. students.

¹⁷ According to AAR2003, also in this project: 'The biggest handicap was in the university procurement procedures, which stalled many activities as no fieldwork and specimen collection could be done without the needed supplies'.

¹⁸ Specific Objectives: (1) To determine the prevalence of abnormal cervical smears in HIV positive and HIV negative women in a semi-urban unscreened population in Tigon, Kenya⁷; (2) To describe the pattern of HPV infection in this population. (3) To evaluate the accuracy of cytology and colposcopy in the diagnosis of carcinoma in situ (CIN) in HIV positive and HIV negative patients against histologic examination as the gold standard; (4) To determine if any cytologic and histologic features have a positive predictive value for HIV seropositive status; (5) To determine the biological risk factors for persistence and disease progression in women with biopsy confirmed CIN I.



influenced by exogenous steroids¹⁹. Supervisors are Dr. Peter Gichangi, Prof. C. Kigundu, Prof. B. Estambale, and Prof. M. Temmerman. It is understood that the research proposal was finalised during AP2004. Unfortunately, progress has been slow (see further below) and the quality of the data collected and quality of data collection methods is apparently insufficient. There is serious doubts that the Ph.D. student will complete his Ph.D.

- * Mrs. Teresa Kiama, a lecturer at the Department of Medical Fysiology. Research topic: The female genital tract microflora and mucosal immunity during the menstrual cycle and their relation to genital viral shedding of human immuno-deficiency virus. Main objective of the study is: To describe the effect of vaginal microflora and various cytokines on HIV-1 viral load during the different phases of the menstrual cycle in women with normal cervico-vaginal physiology²⁰. Supervisors are Prof. C. Kigundu, Prof. J. Bwayo, Prof. M. Temmerman and Dr. Mbugua. The research proposal was finalised during AP2004. The evaluation commission understands that the Ph.D. student has completed the collection of specimen and that data analysis is to be completed in Belgium in April-June 2009, provided that data are indeed released by the UoN's Ethics Committee (see below) following which it envisaged that she will graduate later in 2009.

As in other projects, the Ph.D. students were provided with a stipend of 20,000 Kshs per month, a research grant, funds for books; the project also funded travel of the supervisors to and from Kenya, and conference attendance (e.g. IAP conference in Montreal, Canada in September 2006). Scholarship costs amounted to some € 126,626 in the period 2003–2007.

Some general observations with respect to the progress realised are the following:

- * development of proposals was 'slow' for the two newly recruited Ph.D. students²¹. Delayed approval of the research of two Ph.D. students by the UoN's Ethics Committee delayed the start of data collection of one Ph.D. student – which affected the analysis of another. Similar problems with the Ethics Committee have resulted in a refusal to release data/specimen and allow to take them to Belgium for analysis. It is not clear when this will happen;
- * problems were experienced in recruiting support staff (nurses, data entry clerk, lab technician) and finding space in the Tigoni district hospital to work with the patients;
- * 'uncoordinated activities between students creating misunderstandings thus delay in implementing the project smoothly' (internal assessment report, page 8²²);
- * testing and analysis of samples was affected by erratic availability of testing kits;

¹⁹ Specific Objectives: (1) To estimate the levels of female sex hormones (oestrogen, progesterone and testosterone) in HIV-1 seropositive and seronegative women during the different phases of the menstrual cycle (pre-, peri- and post-ovulatory phases); (2) To estimate the level of HIV-1 (viral loads) in the Female Genital Tract (FGT) and in the systemic compartment of HIV-1 seropositive women: in 2 months' natural cycle; (3) To estimate the level of HIV-1 (viral loads) in the Female Genital Tract (FGT) and in the systemic compartment of HIV-1 seropositive women: in 2 monthly cycles; respectively after administration of injectable (DMPA)-Depo-provera-(medroxy progesterone acetate) and combined oral contraceptive Microgynon-(ethnyloestradiol & levonogestrol); (4) Identify and confirm where applicable other biological correlates (sexually transmitted diseases, decreased CD4 counts, increased viral loads) of HIV-1 shedding.

²⁰ Specific Objectives: (1) To identify and compare the vaginal microflora in HIV positive and HIV negative women in the course of the menstrual cycle. (2) To study the vaginal microflora of HIV positive women in relation to viral shedding during the menstrual cycle. (3) To quantify and compare cervico-vaginal and systemic cytokines in HIV positive and HIV negative women in the course of the menstrual cycle. (4) To study the cervico-vaginal and systemic cytokines of HIV positive women in relation to viral shedding in the course of the menstrual cycle. (5) To determine the influence of vaginal microflora on cervico-vaginal cytokines. (6) To determine the influence of hormonal changes during the menstrual cycle on vaginal microflora and cytokines.

²¹ In the AAR2004 it is remarked: 'The northern team members express their concern in the slow progress of the students despite the guidance the students have received'.

²² The internal assessment report observes in this respect: 'The implementation of the project has been slow due to late proposal development by students and poor communication' (page 9).



- * progress of research was affected also by clinical and teaching responsibilities of the Ph.D. students.

Outreach and HIV/AIDS at the University of Nairobi

This component, which involved an M.Sc. student in Clinical Psychology (Ms Lucy Gakuya) experienced a slow start, as decisions ‘were mainly depending on new persons not related earlier to the project.

In November 2003 a committee reviewed this component and agreed that in order to effectively start the programme, ‘training in counselling to all those involved in handling the various cadres of the university community be carried out’. This training started in January 2004 and continued into AP2004.

During AP2004, the HIV/AIDS Control Program in the University of Nairobi Community completed training activities for the University staff and students²³ and established an Integrated HIV/AIDS care and voluntary counselling and testing (VCT) centre. Various youth activities such as football tournament were organised during AP2004 to popularise this centre. Moreover, a University policy on HIV/AIDS Control was developed in the course of AP2003 ‘with the financial assistance from other friendly organisations’; it is however not clear what role the project has played in this respect.

According to the self assessment report, ‘(the) results arising from the PhD/MSc/MPH training programs will have policy implication in the screening for cervical cancer and provision of family planning methods to HIV positive women. A Task Force has been formed to assess the role of HPV in diagnosis of cancer of the cervix. A cervical cancer screening clinic and ARV clinics have been established and strengthened in the following set ups: Tigoni District Hospital and the University of Nairobi Health Services’.

It is understood that a system of mobilising the community to be screened for cancer of cervix has been well-mapped out through churches and women groups. According to the internal assessment report, this system ‘can easily be duplicated in other area in Kenya’.

Equipment

With project funding a central HPV/PCR laboratory in Microbiology Department, Faculty of Medicine, College of Health Science was set up. Specific investments included: computers, laptops, TVs, video-player, LCD projector, freezer, server, as well as ‘materials for productive health project’, etc. The future of the PCR laboratory is not clear; it will be essential that it remains intact as a comprehensive laboratory where research can be undertaken for which it is intended.

A vehicle was bought to transport project staff to the project site at Tigoni hospital in Kiambu (which replaced Mombassa and Kisumu as originally proposed). A computer room has been set up for the students which will continue to be used for future projects that may spin off from VLIR/RH programme. According to the data available, total investments in the period 2003–2007 equalled some € 105,424.

²³ Trainees included: doctors, clinical officers, nurses, laboratory technicians, pharmaceutical technicians all support and administrative staff of the University Health Services, staff of the Student Welfare Authority, University student leaders, etc



Assessment

Relevance

- * The evaluation commission considers strengthening of capacity in the key areas of the project, i.e. cervical cancer management and heterosexual transmission of HIV as highly relevant in Kenyan society.

Effectiveness

Effectiveness is mixed, with at this stage good graduation perspectives for one Ph.D. student only. The situation of the other two Ph.D. students is uncertain; future developments depend on the outcome of deliberations at the Ethics Committee. When these turn out to be positive, chances are good that one Ph.D. student will effectively complete her study; for the other Ph.D. student this appears unlikely, mainly for reasons of quality of the work undertaken so far. Quality of Ph.D. student supervision appears to have been limited; though problems were experienced already at an early start, little action was done to raise 'red flags' and terminate the Ph.D. grants.

Efficiency

Looking at hindsight, a decision to discontinue one of the Ph.D. students at an earlier stage would probably have saved considerable financial resources (or enable a better candidate to replace the current incumbent). Tighter supervision and stricter timetables for the completion of the Ph.Ds would have been preferable; this would have allowed to raise the 'red flag' at an earlier stage. As in other projects, problems experienced specifically related to procurement of equipment and accessibility to finances whenever need arose. Financial issues were reinforced by insufficient budgeting and high costs of the Ph.D. research.

Sustainability

Gichangi, the Ph.D. student who graduated under the 1st phase, is currently working in Namibia. It is understood that '(many) proposals have been written and have been forwarded for possibility of funding' (Internal assessment report page 9). These proposals, prepared by UoN staff involved in the project with support from ICRH in Gent, have been submitted for the EDCTP programme, which is EC funded. When granted, these projects will help to continue clinical and field work that was started under the project. A concern in this respect is the future of the PCR laboratory, which should remain in tact and not split over various units of the School of Medicine.

Impact

In view of the current state of affairs of the Ph.D. students, it is too early to speak about any project impact. Little is known also about the success of the campaign that was conducted at the UoN in the course of AP2004.

The Network project and its off-spring

8



✿ Network project phase 1

Support to ICT at UoN started during the 1st phase with one general ‘Network’ project. Overall objectives of this project were: (a) to support the implementation of computing and information infrastructure and operations in line with the University vision, mission and strategies; (b) to support the University website and University library system; (c) to develop human resources in line with University Computer Science and Informatics strategic plans and (d) to start an electronic learning project (MTR report, page 26). Expected results ranged from reasonable access to Internet for university staff and students, access to digital libraries, staff development (e.g. teaching of computer science and informatics).

In terms of realizations, the MTR report (page 27) and the project proposal document for the ICT and Digital library project (page 1) report in particular the following:

- ✿ Human Resource Development – Academic staff development – 2 Ph.D. students ‘which had given notice to submit’ their thesis by the end of the 1st phase²⁴, 10 M.Sc. level scholarships awarded of which 7 had completed their training. In the end only Dr. Omwenga, currently Director of the ICT Centre of UoN, graduated under this project in 2005. The other Ph.D. student apparently discontinued her education and moved with her family to Kenya. Technical staff development – 1 ICT user training was provided for over 200 persons (‘managers’ and users).
- ✿ Research/publication: Ph.D. thesis to be presented; 8 M.Sc. theses; 2 contributions to international conferences.
- ✿ Equipment: 2 campus LANs; over 170 PCs, over 25 printers, servers, network equipment, etc. in Chiromo and main campuses.
- ✿ Recurrent cost funding for Internet connectivity.
- ✿ Library support – Acquisition of VUBIS software; Installation of the Bibliographic System (Cataloguing and OPAC) module; Commencement of data conversion, with about 45,000 data converted by November 2002; Training of library staff in data entry for the VUBIS Bibliographic module; purchase of about 30 PCs and 2 printers (some from other projects); Installation of the Library server; networking of several libraries, including ADD, JKML, CHS, IDS, PSRI & Chiromo; provision of books.

According to the MTR report (page 37), the project was ‘decisive’ for building UoN’s network, ‘the most important component’ of the IUC and a first priority of UoN as it would provide e.g. free access to about 8,000 scientific journals. The project had complemented World Bank support to the University and the University’s own invest-

²⁴ Originally there were 3 Ph.D. students, however one dropped out. ‘In May, 2004, Mr. Elijah Omwenga and Mr. Peter W. Waiganjo graduated with Ph.D. in Computer Science from the University of Nairobi. This was a historic occasion for the School and the University of Nairobi, since they are the first students to graduate with this degree. It was a proud moment for the VLIR-IuC-UoN programme’ (AAR2004, page ..).



ments in ICT infrastructure and related human resources development. According to the report (page 28), the project had ‘accomplished almost all its objectives’ and had provided UoN ‘with ICT facilities that are not easily seen in African universities’. As regards the library component, the MTR indicated that this would constitute ‘an invaluable contribution to research and development in Kenya’ (page 38). The project had also given a very important contribution to academic function of the Institute of Computer Science (ICS) that allowed UoN to deliver B.Sc.s and M.Sc.s in Computer Science and to do research at an international level. Another positive finding of the MTR related to maintenance, servicing and support provided at UoN for the future sustainability of the network. A concern expressed related to the retention of qualified staff²⁵ which was considered the Achilles’ heel of the project’s sustainability. The MTR recommended for the 2nd phase a system of post-doctoral scholarships and the funding of research projects involving the former supervisors of the M.Sc and Ph.D holders as a mechanism to reinforce this long-term sustainability.

For Phase 2, the MTR recommended (page 46) continuation of support, with the following specific suggestions: (i) a clear proposal to ensure the sustainability of the project, approved by UoN; (ii) the definition of a local counterpart responsible for the on-going Library projects; (iii) an adequate feasibility analysis of the Library and of the e-learning components; iv) a better dissemination of the information about the Internet access to the available 8,000 scientific journals; and (v) the establishment of research projects with participation of the new Ph.D. holders and appropriate Belgian researchers. The report also recommended, ‘strengthening its research component’ through improved collaboration between ICS and the Department of Informatics of VUB.

For phase 2, the original Network project was split up into three components as follows:

- * Project 3: ICT and Digital Library – a continuation of the critical activities with respect to ICT infrastructure and Library automation;
- * Project 4: Open Learning – focusing on training, research and infrastructure in open learning;
- * Project 5: Computer Science – focusing on research and academic training.

Further details on the Open Learning and Computer Science projects are provided in the chapters 9 and 10 respectively.

ICT and Digital Library

General

The project proposal document gives the following overall objective, i.e. ‘to exploit ICT to more efficiently and effectively support teaching, research, learning and extension services in the University’. The project’s specific objectives read as follows:

- * To provide value-added services in the University ICT network infrastructure, e.g. providing security for equipment, software and data; implement voice/data integration, enhance communication services, etc.
- * To support the recurrent cost of the provision of Internet services.

²⁵ ‘...the only question that remains is the UoN’s capacity for retaining the bright, young and highly trained people that the programme has produced. So far it seems that most of these people have remained in the service of the UoN and are willing to continue an academic career, but it is important that UoN develops a strategy to create an environment that will be attractive not only from a financial point of view, but mainly from an intellectual point of view’ (page 38).



- * To facilitate electronic access to digital information resources.
- * To develop a pool of technical experts in the library to manage and sustain digital library services.

Intermediate results and related core activities mentioned in the same document were the following:

ICT

- * High quality and available Internet services (payment of Internet services).
- * A wider range of communication services are available (implementation of voice/data integration systems, and communications applications in the Intranet).
- * More secure equipment, software and data (implementation of a network management system and replication of critical application servers).
- * Users who are more able to exploit ICT facilities and resources and ICT professionals who can sustain ICT facilities and resources (training of professional staff and users to sustain ICT resources and facilities and of ICT users).

Library

- * Library technical staff trained to sustain a modern Digital Library (training on the administration of the digital library system, electronic resources librarian training and systems librarian training).
- * VUBIS and V-LINK systems are implemented and operational (procurement and installation of back-up server, PCs, laptop computer and data projector; completion of catalog data conversion; construction of a loans desk (for loans module implementation); VUBIS Loans module implementation; V-LINK implementation; training on Loans module and V-LINK and maintenance of VUBIS and Cache).
- * Up-to-date ADB database is available (funding of annual subscription of ADB).

Realisations

ICT

Internet

The project continued to pay for the University's Internet provider (KENET) during AP2003 to AP2007 when payment was taken over by the UoN. Payment of this recurrent cost (which included dial up, bandwidth and wireless links for remote campuses) was initiated under the IUC to demonstrate to UoN the value of having Internet access. Since April 2008, the costs of the connection are being paid by the University itself – this responsibility was gradually transferred from the project to the UoN; initially this implied an amount of € 1.1 million Kshs per month, but with the increase in bandwidth to 14.5 Mbps payment to the provider (KENET) equals some Kshs 3.5–3.6 million per month. Reliability of the network is good.

When a considerable reduction of the Internet connection cost could be obtained late 2004 it was decided to allocate this money for capacity building (one local M.Sc. scholarship and 1 sandwich Ph.D.) for the newly created ICT Management Department.

Communication services

Though planned for AP2004, this was not done 'because of delays in UoN procurement system' and funds set aside for this purpose were diverted to purchase equip-



ment to support the network infrastructure. The situation changed little the course of AP2005 and AP2006, when, once more, delays in procurement were reported. It is not clear from the reporting what has happened in this respect.

Security/Equipment

A start was made with implementing a network management system in the course of AP2003 and it was expected that this would be completed by June 2004. Delays in implementation were experienced due delays in the provision of a separate server for the software; nevertheless the exercise was completed in the course of AP2004. To increase the 'security of data and software resources', the project undertook replication of 'critical application servers'. Spare parts to support the UoN's network operation were procured during AP2006²⁶. The project also paid for a subsidized portfolio of software license for Microsoft products worth Kshs 3 Million.

Capacity building

Training was provided during AP2003 for ICT users on ITC literacy and for MIS users to more 'effectively exploit the various MIS applications'. With funds becoming available from reduced expenditure on Internet, as of AP2004 support was provided for one M.Sc. and one Ph.D. student. The Ph.D. student is Ms. Agnes Wausi, an M.Sc. graduate from VUB, who was selected in AP2003 and has been doing a Ph.D. on organisational implementation of information systems; she submitted her thesis in November 2008. Furthermore the project sponsored training of two UoN staff (Ms. Mbithi: ICT and management training in Arusha, Tanzania (August 2007), and Mr Tenai: Computer security training in India (October 2007)). No conclusive information is available on what happened with respect to the M.Sc.

Library

Capacity building

During AP2003, VUBIS/Cache system administration training (Agatha Kabugu and John Chepkwony, March 2003), electronic resources librarian training²⁷ (Agatha Kabugu, June 2003) and systems librarian training²⁸ (Jacinta Were and Rosemary Kiathe, June 2003) were undertaken in Brussels. More training was needed and VUB was requested to 'transfer documentation & software to UoN and to transfer more skills for sustainability' (AAR2003, page 22). Training on V-LINK was completed during AP2004. Training on the VUBIS Loan Module (2 persons) and the VUBIS Acquisitions Module was undertaken in Kenya during AP2005. Training on the Periodicals module was completed during AP2006. By the end of the project, the following staff members were trained: systems librarian, chief cataloguer, systems administrator, electronic resources librarian.

Despite the various activities, undertaken by Mr Renard of VUB, it is felt that the training provided to date has not been sufficient though the AAR2006 reported that '(the) deputy librarian – technical is quite confident that these challenges can be handled by the University' (page 4). Training needs, according to the interviews conducted, relate to: server maintenance, and VUBIS software (initially DOS based, now Windows based).

²⁶ Overall, investments for the project totalled some € 95,000 in the period AP2003-AP2006, covering both the ICT Centre and its operations and the Library. The available funds were inter alia used for computers, camcorder, multi media projector, digital camera, laptops, server, server racks, internal hard disk, tape drive, printers, redundant power supplies, software, switches and routers, etc.. Between 1998 and 2007, overall investments under the Network and ICT and Library projects totalled € 1,055,245.

²⁷ Topics: V-link-use; V-link administration; ADB administration; Website content for E-libraries; Organizing info-sessions about the use of E-literature.

²⁸ Topics: First contact with circulation, acquisition and periodicals modules of VUBIS (modules not yet operational in UoNB); extra features in the cataloguing-module; introduction to VUBIS Smart (new version of VUBIS); discussion about the loan parameters for UoNB



Despite these shortcomings, it is understood that staff of the library has conducted four workshops for staff of branch libraries at the different UoN schools.

VUBIS and V-LINK systems

Under this component, the project provided support in terms of:

- * Equipment (PCs, data projector, library back-up server, smart UPS, rectifier (PBS) 'to facilitate the commissioning of the loans module'.
- * Construction of a loans desk (for VUBIS loans module implementation), delivered during AP2004 due to delays in procurement.
- * Implementation of VUBIS module²⁹, which, according to the existing agreement, can be installed University wide. This was delayed in AP2003 as the loans module could not be made operational until the loans desk was realised. The modules were implemented. The situation appears not quite clear on support of the VUBIS software in upgrades, technical and licensing.
- * V-LINK, i.e. a web-based interface that facilitates access to web electronic resources through one central point, allowing library users to search several databases at the same time using one search term, implementation which was completed during AP2003 and for one library staff member was trained who 'can perform the maintenance of the system by her self' (AAR2003).
- * Maintenance of VUBIS and Caché.

During AP2005, retrospective cataloguing (some 300,000 titles) was completed; cataloguing for branch libraries (at the different Schools of the UoN) was reported to be ongoing but completed (as far as cataloguing and VUBIS loans module is concerned) in amongst others the Schools of Law, Business, Medicine, Education and the Chiromo campus. The operational library automation system was officially launched in January 2006. In addition to the UoN's own books, the library provides access to some 20,000 electronic journals (full texts, not just abstracts). Together with over 40 other Kenyan institutions, the UoN has a collective subscription to these electronic journals (total cost of approximately US\$ 250,000, with some US\$ 12,000 financed by the UoN).

ADB Database

The ADB (Articles DataBase) database was installed during AP2003 and provides access to over 30 million bibliographic descriptions of articles (not full texts); use of ADB directs the user to the source of electronic articles. Arrangements were made in AP2004 for an annual subscription to update the database, which is updated by VUB and is covered by the VUBIS license. This is a daily, automatic update system, which allows the central library of UoN to get data (based on OAI-protocol) from the ADB-system at the VUB.

Library infrastructure

The project supported the library's infrastructure with inter alia a server dedicated to the library operations, 45 computers, data capture scanners, cabling of the library, bar codes.

²⁹ Modules are: Cataloguing module: to facilitate on-line cataloging and classification of library materials; loans module to facilitate on-line lending of library materials; acquisitions module to facilitate on-line ordering and receiving of library materials.



Assessment

Relevance

The intervention has proven extremely relevant as it has enabled the University of Nairobi to enhance its capacity to store, retrieve and communicate essential information. This investment has been key for the university's academic work as well as university management purposes.

Effectiveness

The support provided by the project has resulted in (a) an operational computer system within the University and (b) improved operations of the central library and, to a certain extent, of the branch libraries (6 out of 12). Access to up-to-date scientific data has been improved. The introduction of VUBIS has enabled better monitoring of library funds and of the usage of library resources. Staff has been trained to maintain the systems introduced though the library could possibly do with more.

Efficiency

The main issue under the heading of efficiency has been procurement of equipment. E.g. it proved difficult to get the computers provided through Close the Gap who ultimately ended up in a warehouse for 6–7 months.

Sustainability

Factors favouring sustainability of project realisations are several: (a) the University of Nairobi has taken over the costs of Internet access per April 2008; (b) a considerable number of staff was trained under the project, both in ICT and at the library and has remained with the University. The ICT Centre has some 70 staff of which over 50% was recruited during the 2nd phase. There is also IT staff at the UoN's schools for school-level user support.

UoN has realised the importance of a personnel policy in ICT that favours people who stay (e.g. by putting relatively young staff in senior positions and by allowing consultancy assignments and payment for conducting short courses). Key will be to ensure that this policy continues to work in favour of maintaining the University's current capacity.

When buying computers, the University has drawn up contracts that include 3 years of maintenance and 3 years of support services.

For the library, Open Source software is coming up and is promoted by VLIR-UOS through a transversal library automation project. This software could, once proven functional, replace the current VUBIS that has created the basis for future computerisation. Moreover, the University already pays for the costs of access to scientific journals (in a consortium with other Kenyan institutes of higher education) and has provided computers in addition to those provided under the project and has taken care of in-house staff training on VUBIS software. It is understood that some 'remote' support will continue to be provided by VUB.

Impact

Impact of the project has been in terms of *inter alia*: enhanced internal and external communication, easier access to library materials and electronic databases that are essential for academic development at the UoN.

Open Learning Project

General

The Open Learning Project (OPLN) is an off-spring of the Networking project of the 1st phase of the IUC when a first Ph.D. scholarship on Computer Science and E-learning was awarded, a fully-fledged e-learning platform (*wedusoft*³⁰) was developed by the same Ph.D. This platform was subsequently piloted 'to model a tailored electronic learning environment'.

According to the partner programme document (page 2) and OPLN project document (page 6) the project's overall objective is 'to make the university of Nairobi's (educational) programs more accessible to the general public and (particularly) to contribute to the socio-economic development of Kenya'. The specific objectives were formulated in terms of (OPLN project document³¹): 'To enhance the human resource capacity in open learning in priority areas ('To increase the number of open learning programmes' and 'To develop research capacity in open learning') and To enhance open learning infrastructural capacity (To develop content in priority programmes; To create and equip learning centres (LCs) and 'To implement required ICT infrastructure in LCs'³²).

Results and intermediate results formulated in the project document were in summary the following:

- * **Open Learning operational at UoN** (University management is aware of importance of Open Learning; UoN Business plan for DE and Open Learning; Workshop programme for training of the Trainers in content delivery techniques in open learning ready; Training of trainers in content delivery techniques in open learning; Operational in-house electronic learning environment; LC administrators trained on content and ICT support as well as management; ICT staff trained in hosting and managing content; Central equipment for development and delivery of Open learning material Available; Resident teachers and LC administrators able to support students using open learning facilities; Learning Centres (LC) operational (each with a 10/100 Mbps local area network, 10 PCs, network printer, network devices, and 64Kbps Internet connectivity) and successfully maintained; Open Learning material delivered in LCs).
- * **Increased number of open learning programmes** (Teaching staff exposed to new approaches, models, etc. in open learning; Priority programmes selected

³⁰ Wedusoft was distributed within Africa through the African Network of Science and Technology Institutes (ANSTI) that is administered by UNESCO,

³¹ The Partner Programme document refers to the following specific objectives (page 2): "to enhance the human resource capacity in open learning by increasing the number of open learning programs, developing research capacity in open learning and providing specific training in content development and delivery techniques to the academic staff". The project also aimed at enhancing the open learning infrastructure capacity 'by creating strategic learning centres which will be developed and equipped with the ICT facilities for electronic learning purposes' whereby it was anticipated that '3 open learning centres will be established and made operational'. Additional aims identified in the logical framework provided with the project document were the following: 'to facilitate electronic access to digital information resources' and 'To develop a pool of technical experts in the library to manage and sustain digital library services'.

³² In this respect, the project document refers to '9 learning centres are each equipped with 10 PCs computers, Internet connectivity, library and other student support facilities are manned and operational' (page 6).



and interested lecturers trained in content delivery techniques in open learning; Reference course material (journals, books and other support learning resources) and delivery strategies are available for one course of each priority programme; All lecturers trained in content delivery techniques for open learning; Content developed for the 3 programmes).

- * **Collaborative research between UoN and Belgian Universities** to enable monitoring & support of Open Learning and to enhance course development and delivery through new technology (Increased capacity (3 Ph.Ds) in research in open learning; Collaborative research in Belgium; Collaborative research in Kenya; Publications and presentations; Basic research Library; Academic staff gain skills in Research methods and ELEs; Active collaboration in content development and research; Projects on joint research funded by other donors).

The project is attached to UoN's ICT Centre and works with the School of Continuing and Distance Education (SCDE) that is part of the Faculty of Adult Education. The project also implied stronger collaboration with the 'technical' faculties, responsible for the content of the E-learning materials. There is furthermore ad hoc collaboration with staff of the Department of Computing and Informatics.

In addition it works with six centres³³, of which one in Nairobi and five in the provinces (Kisumu, Mombasa, Nyeri, Kakamega and Nakuru³⁴). These centres are staffed by a resident lecturer, an administrator, secretary, records clerk, and messenger. Teaching staff of these centres is temporary only and does not necessarily come from the UoN. The centres provide training for basically two types of students: (a) distance students of the Department of Educational Studies. These are generally primary school teachers who want to become secondary school teacher. There are about 6,500 of such students; and (b) students of the department of extra-mural studies of which there are possibly some 3,000. These students study in the evening and during weekends. The centres provide the following types of programmes:

- * certificate courses – up to 3 months
- * diploma courses – 1 year
- * postgraduate diploma courses – 1 year and
- * a 2-year master programme in project management and planning

Students at the centres pay for their education, i.e. Kshs 90,000 for business management, and sales and marketing; Kshs 74,000 for other diploma courses, Kshs 124,000 for postgraduate students and Kshs 275,000 for master students; costs for distance education are said to be similar to those for regular university education.

Realisations

Open Learning operational at UoN *Sensitisation*

March 2003, a 5-day Distance Education workshop, co-sponsored by UoN and VLIR, was held for all senior University management (deans, members of the University Management Board) to sensitise and convince senior staff on the need for Open Learning within the University. A Centre for Open and Distance Learning was established; this

³³ Due to time constraints, the evaluation commission was not in a position to visit any of these centres.

³⁴ There are an addition four centres that were established in more recent times: Kisii, Garissa, Kapenguria and Meru.



Centre is presently staffed by 7 persons, up from an initial 5, financed by the UoN³⁵. Open Learning activities were launched in February 2006.

Planning

Intention was to develop a strategic plan and business plan for E-learning (to be done by the Centre for ICT) and Open and Distance Education (to be done by the Centre for Open and Distance Learning) at the UoN. Some activity took place during AP2003 and AP2004, and a strategic plan ('five year implementation plan') materialised. A real business plan, which would pay also particular attention to the financial aspects of the open and distance learning system of UoN was not developed.

Capacity building

Capacity building activities, which according to the internal assessment form have touched some 350 lecturers³⁷, have included the following:

- | | |
|---------------|---|
| AP2003 | <ul style="list-style-type: none"> * ToT workshop for 20 staff, who were to 'spearhead' E-content activities in various faculties, were trained on E-content development and introduced to the use of wedusoft (June). * 4-day ToT workshop for 9 staff (lecturers, administrators) on student support systems (November) * 2-day training for 6 E-learning technologists/server administrators (March/April) * 5-day training for learning centre administrators (16) on 'content and ICT support and management' (March-April) * 4-day training workshop for 21 lecturers (4-community health, 5-animal physiology, 2-public health, 4-KWSTI, 6-ICT) on content delivery techniques (March). |
| AP2004 | <ul style="list-style-type: none"> * Training on user support and web technology (19-31 July) * A 2-day workshop to assess, amongst others, staff training needs (October 2004) * 5-day E-content development training session (December 2004) |
| AP2005 | <ul style="list-style-type: none"> * 5-day E-content development training session (April) * 1-day in-house training for 6 E-learning technologists on web-design for 50 staff * 2nd consultative forum that brought together all staff trained in E-content development (5-6 October) * 5-day E-content development training for 25 academic staff in (March-April) |
| AP2006 | <ul style="list-style-type: none"> * 2 in-house training sessions and 1 workshop on E-content development as well as a 5-day research workshop with the COSC project during which 20 research papers were presented. |
| AP2007 | <ul style="list-style-type: none"> * 2 training sessions, one for over 40 staff of the Faculty of Agriculture, who were trained in E-content development, the other a UNESCO-sponsored training programme on E-content development for 12 universities from seven countries. |

A course on Research Methods took place in November 2003 and was attended by 14 staff 'who have Masters qualifications and are enrolled for Ph.D. or have credible evidence of intention to pursue further studies'. A workshop planned on Research in Open Learning was deferred to October 2004, then to AP2005 when it was not held in order to save funds to allow the Ph.D. students to complete their training and to be ready enough to be able 'to engage in meaningful discourse in their areas of specialisation'. It is understood that in the end the course did not materialise.

E-Learning Platform

Activities to enhance the E-Learning Platform for large scale use were completed during AP2003 and made visible on the Internet though at the time it took 'too long

³⁵ It is understood that UNESCO has given a grant of US\$5,000 towards the development of E-learning activities at the University of Nairobi. This money has been used in setting-up the e-learning lab and office for the E-learning staff at the ICIPE Centre. Since March 2007 staff is accommodated in an office at the Centre for Biotechnology and Bionformatics at UoN's Chiromo campus.

³⁶ Priority areas identified in the plan, which appears mainly project-related, are the following: (a) Finalise content development in priority courses and programmes; (b) Debug and evaluate these courses; (c) Implement test cases; (d) Extend the process; (e) Build sustainability structures and mechanisms; (f) Offering E-training on the process of content development; (g) Rolling-out the E-learning system with courses at the learning centres and (h) Enabling fast Internet access to our E-learning server.

³⁷ The number of lecturers trained in E-content had increased to 100 in AP2004, 120 by the end of AP2005 and 150 in AP2006.



to access the E-learning server on the Internet'. During AP2004 it was agreed with ANSTI (African Network of Science and Technology Institutes, hosted by UNESCO) that ANSTI would host the *wedusoft* server. Access to the server has improved since. It is understood that the E-learning platform has been used 'to train staff from across 12 countries in Africa spanning over 15 different universities under a UNESCO programme of 'ICT for Science and Engineering Education in Africa' (Internal assessment form, page 13).

Equipment

The first ('central') equipment orders were placed during AP2003; again issues related to procurement were mentioned in the AAR2003³⁸. Equipment purchases, which continued into AP2006, included amongst others: PCs, monitors, printers, memory sticks, digital camera, servers, multi-media projector, data projectors, redundant power supply, laptop, etc. The project also funded the procurement of books and subscription to a selected number of journals. Between 2003 and 2006, investments totalled some €95,318.

Support for Local Centres

Three to four computers and a printer each were bought and distributed to the existing six learning centres during AP2003 when also tenders were launched to network three of these centres to the Internet. Visits were made during AP2003 to the new centres and lay-outs were prepared. During AP2004, based on the AAR2004, there was little development with respect to the new centres. It is understood that by AP2006, the 'centres (are) networked but backhaul connection delayed due to financial constraints' (AAR2006). It is understood that local centres were also each provided with 20 Close the Gap computers. UoN contributed by putting up a network, and the provision of new furniture, benchwork and electrical cabling.

During AP2005, an E-learning lab/Learning Centre was set up at the Jomo Kenyatta Memorial Library; development of this Centre was related to the development of the library under the ICT project. The lab was furnished with 20 computers (provided through Close the Gap and replacing computers bought earlier by the project but refused by VLIR-UOS and subsequently transferred to the COSC project).

Open Learning materials at Local Centres

During AP2003 and AP2004, three programmes were available on the E-learning Management System. Priority programmes were selected during AP2003 and initiatives to review, upgrade and convert three existing distance education programmes to open E-learning started in the course of the same year. 12 other programmes were to be available before the end of 2004. The AAR2003 observes in this respect: 'As soon as the computers at the centres are networked we shall roll out at least four programmes which shall include Research methods and Quantitative techniques'. It is understood that four programmes were available by AP2005, though the number of courses 'relevant to the programmes being run at the E-learning centres' and available on the E-learning platform remained at 5. By the end of AP2006, over 150 courses had been developed, reviewed and implemented of which 50 had been prepared during that year. Debugging of (part of) the courses was undertaken. A further 60 courses were developed during AP2007 resulting in a total of some 200 E-courses (the internal assessment

³⁸ 'There is a need to streamline procurement procedures; we were not able to place order to a network printer of choice due to the cumbersome procurement procedures'.

form mentions 250). It is understood that E-learning materials are currently available for the following courses and programmes:

Diploma	Business management; human resource management; public relations management; sales and marketing; purchasing and management and guidance and counselling
Postgraduate diploma	Human resource management and project planning and management
Masters	Project planning and management

Part of the traditional distance education programme for primary school teachers has also been converted to E-learning (e.g. Arts and Sciences).

An issue identified with respect to content development is that this ‘tedious and time consuming task’ needs a ‘better system of remuneration’. This conforms with issues mentioned by UoN staff during the closing event of 2–4 February 2009 in terms of: effort and time needed to convert teaching and learning materials into proper E-materials (including texts, powerpoint presentations,...); incentives for staff to actually participate in this conversion and intellectual property rights. It is understood that people from the faculties get some financial remuneration for their involvement in E-course development (the equivalent of € 200 per course). Moreover, preparation of one course unit equals one publication and is considered when promoting staff.

A Quick reference manual for E-content development was finalised during AP2003 and presented to all content developers. A start was made with development of an online course on “E-content development process” to be available by June 2004 on the *wedusoft* platform. The on-line course became available, on-line and on CD-ROM, during AP2005. CD-ROM production was sponsored by UNESCO.

On several occasions it was recommended to publish materials coming from the workshops held by the project and to set up an ‘editorial committee’ for this purpose; however, this does not seem to have materialised yet though a 1-week workshop ‘to steer the development of reference manuals and other documentation of the project’ was held in May-June 2008.

Collaborative research

Ph.D. students

Intention was to have 3 Ph.D. students in the fields of ‘change management in moving into open learning, integration of E-learning in higher education, enhancing teacher education and student support systems’. This apparently changed when in AP2003, three students were selected (Gakuu, Omondi and Mungai) of which two in the area of Student Support systems and the other in the area of ICT and Education. With support from the Flemish project leader (November 2003 and March/April 2004), the students prepared their proposals which were presented in May 2004 to the Board of Postgraduate Studies of UoN. However, during AP2004, only one Ph.D. student remained as Omondi³⁹ was discontinued due to poor progress and Mungai’s scholarship was cancelled since he obtained a second parallel scholarship from DAAD. Ph.D. student Gakuu submitted his thesis in the course of AP2005 and graduated by September 2006.

³⁹ It is understood that later on he did graduate and obtained his Ph.D.; he is currently lecturer at the CEES of UoN.



Two new Ph.D. students (Robert Oboko (who had obtained a M.Sc. from VUB under the 1st phase) and Patricia Muchiri) were subsequently selected in AP2004; they were expected to have the final version of their proposals ready by June 2005. Robert Oboko is expected to be through his research in 2009. The same is true for Patricia Muchiri.

From AP2004 onwards, the project provided the Ph.D. students with a stipend (Kshs 20,000 per month), book allowance, and research funds; regular travel to Belgium was financed as well (e.g. in January–February 2004, October–November 2005) together with funding of some conference attendance. Some Ph.D. funding was also set aside under the ex-post programme. It is understood that a joint UoN-VUB degree will be granted.

Papers, presentations and conferences

Although not foreseen, a newsletter was produced in AP2003 (both print and electronic version) together with a website for the project. It is not clear whether a second version of the newsletter ('coming soon') was produced.

An overview of some of the publications (research papers, conference papers) is provided in Appendix 5⁴⁰.

In terms of conference attendance, several UoN staff members (Omwenga, Waema, Waigonjo, Mbwesa) have attended amongst others the following events with project funding: E-learning conference in Washington, USA during AP2003; International ICT conference in Dar es salaam, Tanzania and an International conference on teacher education in Florida, USA during AP2004. Staff also attended other conferences with sponsorship from other sources (e.g. and E-learning conference in Montreal, Canada during AP2005 and an E-learning conference in Berlin in November 2006).

Assessment

Relevance

Enhanced quality and scope of the UoN's open/distance learning activities, provides better opportunities to students outside Nairobi to have access to (academic) education and to continuing education as far as primary school teachers are concerned. More information is however needed from the intended target groups to be able to judge whether the system developed responds to their needs. The activities in the project seem to be heavily concentrated on the 'supply' side of project at the expense of the 'demand' issues. Since the evaluation commission had no opportunity to interview students in the project, and no assessment has been done under the same, little is known about the appreciation of the new E-learning materials by the students.

Efficiency

The project has shown a considerable level of activity; good use appears to have been made of the relatively limited resources available. Close the Gap computers have adequately supplemented equipment provided under the project itself. Like other projects, the Open Learning projects faced some complications and delays in the procurement of equipment.

⁴⁰ The self assessment form refers to: 10 articles in international peer reviewed journals, 15 in national peer-reviewed journals, 10 conference proceedings and 15 abstracts as well as 2 book chapters.



Effectiveness

Though some form of distance education exists at the UoN since the 1980s (at least in the Colleges CEES and CHHS, considerably less so in other schools), the project has given a boost to its further development. Sensitisation of senior management and teaching staff, who initially did not believe in the possibilities of distance learning, has been instrumental, together with staff training and the provision of equipment. A series of programmes and courses was developed and is reported to be in use. There now exist print materials, print materials on CD-ROM as well as platform courses that are (though not everywhere) available through Internet (though to a more limited extend).

The project has contributed to increased networking, e.g. through the Pan African Research Agenda on the Pedagogical integration of ICT (5-year project funded by IDRC), ...

The project is reported to have been instrumental in launching a master programme in distance education conducted at the School of Continuing and Distance Education (58 students enrolled at present).

Sustainability

A North-South-South project was approved for funding by VLIR-UOS in November 2008. The project involves the universities of Nairobi and Moi in Kenya, the University of the Western Cape (UWC) in South Africa, the Eduardo Mondlane University in Mozambique and VUB. Through the collaboration, UoN and UWC 'want to share information and knowledge to enhance their own training capacity and the enhance the e-learning capacity of the University of Eduardo Mondlane and Moi University as a model for creating partnerships that use existing capacity to help grow new capacity in universities that are emerging onto ICT in education scene" (NSS Summary sheet, page 1). The project envisages: adaptation of training materials and creation of a repository thereof; organisation of pilot workshops; presentation of results and materials at African conferences.

There has already been some cooperation with the UNESCO office for East Africa as well as the African Virtual University. The UoN also initiated the African Virtual Open Resources Initiative (AVOIR) that involves some 10 universities from different African countries.

Institutionally, an issue warranting attention is that there are now several units within the UoN that deal with distance education, open learning, E-learning: Centre for Open and Distance Learning; School of Continuing and Distance Education; Department of Extramural Studies. There will be a need to review this set-up in order to enhance further cooperation and consultation and reinforce the quality of the University's off-campus education provision.

Impact

Distance learning centres have seen an increase in the number of students enrolled to some 10,000; this has increased the UoN's income from this type of education. This money is partially used to finance the salaries of the Distance Education unit as well as of staff members who are responsible for the contents of distance education materials. Little can be said on impact as so far the emphasis has been on producing relevant E-learning materials while little is known about the usage of these materials, quality of student support services, etc.



Computer Science (COSC) project

10



General

Like the Open Learning Project, the Computer Science project is an off-spring of the Network project of the 1st phase of the IUC when ‘(academic) capacity building in Computer Science was a small sub-component’ and the emphasis was on improving the UoN’S ICT infrastructure with comparatively limited funding earmarked for capacity building and collaborative research’. A number of M.Sc. students was trained on local fellowships during the 1st phase.

The overall objective of the COSC project according to the project description (page 9) reads as ‘Create sustainable Computer Science research capacity and activity at the Institute of Computer Science, University of Nairobi’. Its specific objectives are the following:

- * Develop and use a clear Computer Science Research Policy and Strategy.
- * Enable Computer Science researchers to regularly access and use Computer Science journals and advanced textbooks for their research.
- * Hold one international Computer Science conference and workshop in East Africa region in the period 2003 to 2008.
- * Actively participate in local and international Computer Science networks.
- * Create and sustain 3 Active Research groups in Institute of Computer Science University of Nairobi.

The project’s intermediate results and related activities can be summarised as follows:

- * Foundation laid to facilitate the carrying out of research (on-line journal access seminar; Workshop to develop computer science research policy and strategy).
- * A laboratory devoted to research has been developed so that researchers have access to essential research equipment and software (purchase of equipment, software).
- * Advanced training in Computer Science at Masters and Ph.D. level through collaboration between University of Nairobi and Belgian Universities (sandwich Ph.Ds, research M.Sc. students, research paper writing and presentation).
- * Collaborative links between University of Nairobi and Belgian Universities strengthened through visits of Kenyan researchers to Belgium and vice versa.
- * The Institute of Computer Science has built a stronger base of key research publications (books and journals) (provision of subscriptions to on-line journals and key books).
- * Researchers whose capacity was built in the first phase of the VLIR – IUC – UON project are actively engaging in research (publication in international journal,



publication accepted at international computer science conference, supervision of M.Sc. and/or Ph.D. students).

The project is situated at the School of Computing and Informatics of the UoN.

Realisations

Foundation laid to facilitate research

A workshop to develop a computer science research policy and strategy was held in Mombasa in July 2003, attended by 12 academic staff from the UoN and VUB and a strategic plan was completed. Research groups were formed in the following areas: Artificial Intelligence (AI), Distribution Systems (DS) and Information Systems (IS). The frequency of meetings of these research groups appears to have been below expectations ('intermittently'). An on-line journal access seminar that was originally planned, was omitted as there was no need for it and since 'through the ILIB project, there are numerous on-line journals available'. The evaluation commission was informed that the research groups that were set up are not yet sufficiently strong and will need further development for their survival in the years ahead.

Laboratory development + books and journals

Equipment was ordered during AP2003. Specialised software (Agent Builder and expert system shell) was ordered and installed; the same is true for other software identified at the strategy development workshop referred to above. Delivery of equipment experienced some delays ('Procurement through the University is still taking very long. Documents also get lost') but did not affect the start of 'relevant research activities'. For the period 2003-2007, investments under the project totalled some € 73,267; the budget was used for inter alia the purchase of: LCD projectors, data projectors, computers, software licenses, servers, printers, etc. By the end of AP2004, the UoN approved the development of more space for the lab.

Advanced training in computer science

Two sandwich Ph.D. students (Mr. Eric Ayienga and Mr. Elisha Opiyo) commenced in July 2003 and in January, 2004 both students presented their final proposals to the Research Committee of the School. These were accepted and full Ph.D. registration was granted to both. Two local Ph.D. students (Mr Sam Ruhiu and Miss Christine Ronge) were recruited in the course of AP2004; one took up his scholarship in September 2004. For Ronge this was put on hold as she had obtained a Commonwealth fellowship; she took up the scholarship in March 2006 only.

During AP2003, one M.Sc. student was recruited (Mr. Evans Miriti) followed by two more in the course of AP2004 (Paul Kariuki and Josephine Mwangi). However, 'because the M.Sc. programme that they joined was delayed by about six months', training of the latter two started in January 2005 only. Because of savings on the Ph.D. students, another M.Sc. scholarship was introduced in AP2005. By July 2006, two of the M.Sc. students had completed their training. In AP2003, 'a main challenge has been funding the programme since it appears that the University of Nairobi had not committed funds to pay for the fee waiver given to the students'.



The status of Ph.D. students at the time of the evaluation is as follows:

Peter Wagacha	Graduated	Lecturer, School for Computing and Informatics
Eric Ayienga	Ongoing	Proposed to submit this year
Elisha Opiyo	Ongoing	Proposed to submit this year
Sam Ruhii	Ongoing	Proposed to submit this year
Christine Ronge	Ongoing	Proposed to submit this year

Publications, conference papers

According to the data available, within the framework of the project 5 publications and 32 conference papers were written. An overview is provided in Appendix 5.

Collaborative links

A series of exchange visits was undertaken during the project; Belgian professors generally used the visits to provide advanced courses and/or were involved in M.Sc. and Ph.D. student supervision⁴¹:

A key challenge identified in the AAR2003 was in this respect the following: difficulties were experienced in recruiting Belgian computer science academics from some of the research interest areas to visit Kenya, one reason being that '(most) Belgian academics find it difficult to find 3 weeks in their schedule for a visit'⁴². In the interviews, reference was also made to 'cumbersome' VLIR procedures. The situation appears to have improved over time as is evident from the number of Flemish academics that has been involved.

During the AP2006, the major activity was the 1st International Computer Science and ICT conference (COSCIT 2007), a joint initiative of the COSC and OPLN projects, that was held from 5 to 7 February 2007. It brought together Computer Science, Information Systems, ICT in Education research researchers and students from inter alia Belgium, Botswana, Kenya, USA, UK, and Canada.

Regular visits were furthermore paid to universities in the region; e.g. Makerere University (January 2003), University of Dar es Salaam (April 2003), National University of Rwanda (AP2004). As an outcome of these initiatives, several universities in the region (from Kenya, Tanzania, Uganda, Rwanda and Ethiopia) were jointly awarded a research grant by the Swedish International Development Agency (SIDA) 'to develop a high level Regional M.Sc. programme' to be hosted by Makerere University. Several meetings were apparently held over the years and a draft curriculum was proposed. The status of this regional programme is unknown to the evaluation commission. It is understood that there has been some bilateral cooperation with Makerere University in terms of proposal writing, evaluation of post-graduate students and conference activities.

⁴¹ AP2003: Dr. William Okelo Odongo and Dr. Katherine Getao. Visit to VUB (COMO laboratory), December, 2003. Prof. Bernard Manderick, January and March (course in Lambda Calculus and game theory); Prof. Luc Steels, March (advanced Natural Language Programming course). AP2004: Kenyan Ph.D. promoters (November 2005 and January 2006); Prof. Bernard Manderick. AP2005: Dr. Guy De Pauw (University of Antwerp, UA) - Natural Language Engineering (own budget); Dr. Sven Castelyn (VUB) - Internet Modelling; Dr. Wolfgang De Meuter (VUB) - Aspect-Oriented Programming Professor B. Manderick (VUB). AP2006: Dr. Guy De Pauw (UA). During AP2005, a collaborator from MIT (Dr. Nathan Eagle) also held a course on Mobile Phone programming and data mining.

⁴² Similar observations are made in the AAR2004: 'One of the difficulties has been getting visiting Belgian researchers to come and conduct short specialized courses in all the three broad research areas that we have. Another difficulty; due to the fact that the academic calendars are similar, mutually convenient timing is difficult'.



Assessment

Relevance

Enhanced capacity at the School of Computing and Informatics responds to a need for more and better qualified computer expertise in Kenyan society.

Efficiency

Ph.D. students have retained their teaching responsibilities during the training; this has reduced the time available for completing their Ph.D. programme. Problems were also experienced in terms of procurement. Project staff, on both sides, has had little to do with administration as much of this was handled by the programme coordinators.

Effectiveness

Based on the limited data available, it can be concluded that the project was implemented efficiently. Procurement delays that the project faced did not affect its implementation substantially. Some problems were initially experienced in getting Flemish academics on board but this improved in the course of the project.

Sustainability

Ph.D. students, like the M.Sc. students are staff members of the School. Salaries have increased at the UoN, making it somewhat easier to stand competition from the private sector. Moreover, staff is permitted to undertake consultancies; at the same time care has to be taken that consultancies do not prevent the implementation of regular teaching and research activity within the School. Collaboration has been established with inter alia Nokia (mobile phone programming), Google, ... There has been some involvement with universities in the region (e.g. Makerere University and the National University of Rwanda) using funding from the Netherlands.

Impact

Enhanced institutional and human capacity has made the school be recognized and attract demand for technical support from the government and the private sector. For example, the school was commissioned: to evaluate Health Management Information System (HMIS) by Kenya's Ministry of Health; by Kenya Revenue Authority to develop tender evaluation specifications; and by Inter-university Council of East Africa (IUCEA) to develop a web portal. The information available does not permit the evaluation commission to make a well-informed judgment on project impact.

Overall Assessment



Introduction

This chapter provides a summary assessment of the IUC as a whole – taking into account the key result areas (KRAs) that were specified for each project in the annexes to the Partner Programme for the 2nd phase). It starts with an assessment in terms of the key ingredients of the cooperation, i.e.:

- * capacity building;
- * institutional development + equipment;
- * teaching development;
- * research;
- * networking;
- * outreach.

It subsequently, proceeds with an assessment in terms of the main criteria of relevance, effectiveness, efficiency, impact and sustainability.

Capacity building

Capacity building – i.e. the training of academic and other UoN staff (technical, administrative, e.g. at the library) – has taken place over the years. All together, the IUC programme has witnessed the following:

- * 28 Ph.Ds were funded. With respect to the Ph.D. students, the situation is briefly as follows:

HIV/RH	1	1	2	-	4
MASCOM/Aqua	4	4	2	2	12
ICT	1	1		1	3
Open Learning	2	-	2	-	4
Computer science	1	-	4	-	5
Total	9	6	10	3	28

- * Two of the ongoing Ph.Ds in HIV/RH are ‘struggling’ and whether they will really be able to graduate this year (or at all) is not 100% clear. Ph.Ds were granted either UoN degrees or combined degrees. The status of the Ph.Ds of the Aqua project is not known in two cases but the available information shows that KRA 2 (‘Four new lecturers with Ph.D. level trained and employed’) is likely to be real-



ised though, as observed, not all will be working at UoN.

- * Some 30 M.Sc.s were trained – either at UoN and/or in Belgium
- * Some 200 people were trained on aspects of E-learning coupled with sensitisation of UoN staff to importance of ICT and potential of E-learning.
- * Some training of technicians has taken place as well – e.g. under the ICT project. In case of the MASCOM/Aqua project, technician training seems to have taken place in the 1st phase only and not, as foreseen according to the KRAs, in the 2nd phase.

As regards staff development, the evaluation commission has observed that:

- * staff trained has remained with the UoN to a considerable extent, though with some exceptions with people having gone elsewhere – either abroad or to other (international) organisations (AQUA, RH, ICT) or where never employed with the UoN to start with (AQUA). UoN has introduced some staff policies that have proven helpful in retaining staff: e.g. nomination of younger staff in more senior positions, possibility to undertake consultancy, rewarding E-course development;
- * UoN has supported staff development by providing fee waiver (Kshs 105,000 for an M.Sc. student) – though this may not have happened in all cases.

At the same time, expectations as to the speed of completion of Ph.Ds have been too optimistic as the students often had considerable teaching responsibilities. Selection of Ph.D. candidates at times may have been an issue as well, e.g. in RH. Stricter but realistic timetables for the process of Ph.D. completion would have been useful – if adhered to – and supervision of Ph.D. students could have been more strict (RH is a case in particular).

Institutional development

The programme has made considerable progress in terms of institutional development through:

- * establishment of an operational ICT network infrastructure – which was virtually non-existent at the start of the Programme – through provision of hardware, software, capacity building, and financing of recurrent costs of Internet access. The KRAs identified for the ICT and Digital library project appear to have been realised;
- * improvement of library facilities – through provision of hardware, software and training;
- * provision of ICT facilities (including computer hardware and software) for Open learning, HIV/RH, and the COSC project;
- * improvement of research facilities by providing equipment for academic and research work (such as the PCR at the School of Medicine under the HIV/RH project and laboratory facilities at the School of Biological sciences and improvement of Moana facilities under the MASCOM/Aqua project);
- * some organisational change as regards ICT through the establishment of the ICT Centre separate from computer studies.



As a result of these efforts:

- * in the areas covered by the Programme, a good basis have been created for offering quality education and training using modern equipment;
- * the importance of ICT has been recognised at senior management levels – this includes the use of ICT in open/distance learning. This is also evident from the decision of UoN management to continue to finance the recurrent costs (Kshs 3.5–3.6 million per month) of Internet access;
- * staff has been trained for operation and maintenance – the issue will now be to keep them on board, especially in ICT.

At the same time it is understood that adequate arrangements remain to be made with respect to maintenance and updating of the VUBIS system at the library. The potential of Open Source software ought to be assessed in the years ahead. Moreover, the future of the PCR lab remains to be determined.

Research

Through staff development and better facilities, the programme has enhanced capacity to conduct research. Some joint research, involving Belgian and Kenyan academic, has been conducted, often within the framework of Ph.D. thesis preparation. An issue appears that selected research topics were not determined following real research strategies in the domains covered by the projects but more on basis of individual interest (on both the Belgian and the Kenyan sides).

As a result of the IUC programme there has been a number of publications in journals and books and a number of papers presented at international and national conferences (see also the preliminary overview below).

ICT	1	1	2	4
Open Learning	3	7	3	13
Computer science	5	32	-	37
RH	7	-	-	7
AQUA	27	13	1	41
Total	43	53	6	102

As regards these accomplishments:

- * unfortunately research outputs have not been well documented and it is likely that the data presented do not reflect all accomplishments under the Programme;
- * on the basis of the information available, the number of *joint* Kenyan/Belgian publications, a KRA for all projects, appears to be some 58, of which 10 in Open Learning (mainly conference papers), 25 in computer science (in both cases these are mainly conference papers), 6 in HIV/RH and 17 in MASCOM/Aqua;
- * research groups in computer science (AI, DS and IS), established in line with the



KRA of the COSC project ('Active Research groups') are not yet strong and will need a further push to become effective; luckily no heavy investments are needed to further develop this research. 'Collaboration with Belgian research groups' (KRA 2 for the COSC project) appears well developed, given the number of joint publications mentioned above and continued collaboration between UoN and Belgian universities at e.g. Moi University;

- * policy oriented research based on extension services or working with communities or public and private institutions seems to be very limited leave alone being an area of research agenda. The potential for this kind of research is big keeping in mind the capacity building that has been done through the programme.

✿ Teaching development

Teaching development was mainly through the Open Learning project which included the development of Distance Learning teaching and learning materials based on *wedusoft*. Though the evaluation commission was not in a position to judge the quality of these materials that are now available through Internet and on CD-ROM, the project's KRA of 'Increased number of Open Learning Programmes' seems to have been realised.

KRA 2 of the Aqua project ('The UoN delivers an international post-graduate programme on Aquatic sciences') did not materialise as planned. A syllabus was produced but post-graduate students appeared reluctant to join the programme designed. It is finally understood that at there has been some teaching development undertaken by the Programme at the School of Computing and Informatics.

As regards the accomplishments to date:

- * Sensitisation was undertaken within the University on distance/open learning and this has born fruit as there is more recognition for distance learning. There is a personnel policy in place according to which staff is 'awarded' when undertaking e-learning course development, also in terms of academic career. There has also been recognition of UoN's open/distance learning efforts by UNESCO. Hence, the KRA of 'University management is aware of open learning' appears to have been realised.
- * The number of open/distance education learners (to a large extent primary school teachers who want to become secondary school teachers) has increased. With this increase, University income from this type of education has increased as well. This income will be an important factor for sustaining UoN's distance education system.

For the immediate future, a particular issue will be to look not only at the University as a producer of E-learning materials but to pay particular attention to the user side. The university has to put in place mechanisms for monitoring progress and assessing the perceptions of users of the quality of the programmes and materials and the support services provided by UoN staff.



Networking & collaboration

The evaluation commission observes that the IUC Programme has provided a platform for:

- * networking between Belgian and UoN academics coupled with a generally positive assessment of the support provided by the Belgian academics, e.g. as regards Ph.D. supervision. At the same time it can be observed that the frequency and intensity of contacts has been highly variable. In ICT and Aqua, it has not always been easy to find interested and available Belgian academic homologues; this appears to have improved over time. Sustainability of these existing relationships is difficult to assess though several joint proposals for continuation of research were or are expected to be prepared;
- * networking within the University - particularly in ICT (ICT Centre, library, School of Computing and Informatics,...). At the same time, questions have been raised regarding the links between those of ICT and those involved in education in the field of distance education and whether the current organisational set-up (Centre for Open and Distance Learning; School of Continuing and Distance Education; Department of Extramural Studies) will work in the long-term;
- * some networking in the region - e.g. in ICT with Moi university, in Open Learning with University of Western Cape in South Africa, Moi and Eduardo Mondlane (with all three universities participating in the VLIR-IUC Programme). In ICT there has been networking with e.g. Makerere university (within the framework of a Netherlands funded programme). The UoN has also been at the basis of a network in open learning through African Virtual Open Resources Initiative;
- * the development of joint proposals for continuation of research (RH, COSC) that have been submitted to external donors (like VLIR, EC, and others).

Outreach

Outreach has been limited and was never at the core of the programme. An exception appears the RH project where health services (treatment of patients) were incorporated into Ph.D. research. Despite the opportunities under the AQUA and Open Learning project, not too much was effectively done in relation to communities and future users. Outreach appears to have been 'limited' to academic community, either locally or internationally, particularly through participation in conferences. This is in line with KRA 4 of the Aqua project.

Assessment on the basis of key criteria

Relevance

Key elements of the programme, in particular in ICT, are in line with the University's own strategic plans and can be considered as relevant.

Effectiveness

Effectiveness of the Programme has been mixed. By and large a considerable number of people was trained at Ph.D. and M.Sc. levels, but in not all cases have the students



graduated and for some graduation prospects appear somewhat bleak. Effective monitoring of the Ph.D. students has been limited at times with insufficient 'red flag' waving in case of key problems. Capacity building efforts have been strong in the areas of ICT, Open Learning and Computer Science and staff trained have remained with the UoN to date. This is less the case for the AQUA and Reproductive Health projects, where a number of Ph.D. graduates is currently employed outside the University, or even outside the country.

Institutional development in ICT has inter alia resulted in an operational computer system and improved operations of the central library and, to a certain extent, of the branch libraries within the UoN. Staff was trained to maintain the systems introduced though the library could possibly do more. The Open Learning project has evidently given a boost to further development of open/distance learning through sensitisation of senior management and teaching staff, staff training and the provision of equipment. A series of programmes and courses was developed and is reported to be in use. There now exist print materials, print materials on CD-ROM as well as platform courses that are (though not everywhere) available through Internet (though to a more limited extent). The key issue in this field is the use of the systems established by the fee-paying students. Overall, teaching development and outreach have received limited attention and limited results have been accomplished. Collaborative research has indeed been undertaken, though much more in the ICT than under the AQUA and Reproductive Health projects. The projects appear to have contributed to increased networking.

Efficiency

Programme management has faced several challenges throughout the IUC; probably thanks to the commitment of the programme coordinators, it has nevertheless been possible to realise most of what was foreseen. Key challenges include in particular the following:

- * Difficulties in matching the high volumes of sometimes contradictory rules and regulations of VLIR-UOS and the Belgian Government and UoN and the Kenyan government in terms of financial management, and procurement of equipment and other research items. The situation was further compounded at times by not particularly helpful regulations of the Flemish universities (e.g. with respect to payment of students coming from abroad).
- * Finding a balance between role of VUB and role of UoN in management and handling finances (VUB as 'the bigger brother' in the current set-up of programme management).
- * While coordination mechanisms were established through the various Steering Committees, these have not always proven effective for solving problems that were experienced. At the same time, the system of appointing project leaders and deputy project leaders appears to have worked to a certain extent as it allowed for continuation of activities also when the project leader was absent. There has been insufficient recognition for the time it has taken for project leaders to manage their projects; the unilateral decision to discontinue topping up payments has had a negative impact.
- * Limited support from VUB ICOS in terms of handling programme administration and resulting in delays in transfer of funds to UoN. Internally, the UoN's Grants Office has not been fast either in channeling money to students.



- * Limited feedback on financial and technical reports by VLIR made the production of the reports to be just a routine exercise. This encouraged 'cut and paste' approach to writing these reports and also being produced in the last minute. Besides, there is no evidence that the recommendations of the two commissioned consultancies on management were used to make the programme more efficient and effective.
- * Information flows within and among the individual projects – certainly down the hierarchical ladder – among Kenyan and Belgian project leaders has not always been optimal.
- * Insufficient attention for documenting what happened, resulting amongst others in progress reports of limited quality and difficulties in getting a good picture of what was realised in terms of e.g. publications by the end of the cooperation.

Impact

Overall, little can be said about the actual impact of the Programme. Insufficient information is available for the evaluation commission to make a well-founded and balanced assessment. Impact is clear only for the ICT and Library project, where impact has been in terms of inter alia: enhanced internal and external communication, easier access to library materials and electronic databases that are essential for academic development at the UoN.

Sustainability

Prospects of sustainability are strong as far as ICT is concerned. This is evident from inter alia:

- * Recurrent funding by the UoN of the costs of Internet access;
- * Mechanisms put in place to retain qualified staff at the Computer Centre;
- * The University's own funding for further improvement of the ICT infrastructure;
- * The organisational set-up and functioning of the ICT Centre and the attention paid to planning.

❁ Assessment Phase out programme

A 2-year IUC ex-post programme with the UoN was prepared covering the period April 2008 to March 2010 with a total budget of € 122,380. Of this budget € 20,000 was allocated for 'closing of accounts, supporting follow-up activities'. Main components of this ex-post programme, scheduled for year 11, i.e. 2008-2009, were the following:

- * The closing event, accompanied by an 'international conference, (held on 2-4 February 2009) where PhD students presented their results. The conference was open to the university community of Kenya, partner organizations like Kenya Marine and Fisheries Research, key donors (held on 2-4 February 2009) and a final joint steering committee meeting (5 February 2009).
- * Continuation of Ph.D. fellowships (OPLN project), with a study visit of all Ph.D. students to Belgium on the AP2007 budget.
- * Workshop on Research Proposal writing and Intellectual Property Rights, together with the Science Foundation.



- * Development of a web-based database of project calls ‘in which information and links of relevant project calls will be announced’, together with the Centre of International Projects and Links (CIPL) of UoN.
- * Stimulate writing of proposals, under which ‘a travel budget will be reserved for each project which had research components (2 travels for each) ‘to help different actors to write proposals’ in ‘new domains’. In this respect it is worth mentioning that the International Foundation of Science (IFS, Sweden) organised a successful workshop in scientific writing in September 2008 with funds provided directly from VLIR-UOS to staff of UoN involved in the IUC programme.

It is understood that the above workshops were indeed held as planned, though financed by VLIR-UOS directly. No further information is available.

The internal assessment files did not contain specific follow-up plans but the evaluation commission understands that:

- * A proposal was submitted by the UoN’s School of Computing and Informatics in response to the RIP 2009 Call for a project entitled ‘Empowering the Visually Impaired through Deployment of New Technology. The proposal was, however, not accepted, mainly because it was not sufficiently well prepared.
- * A € 22,000 proposal was also submitted to the VLIR-UOS CTG ICT Fund; the proposal was also submitted by the School of Computing and Informatics together with the Kenya Society for the Blind (KSB) and involving Prof. Georges Eisendrath of VUB. Under the initiative, the School will ‘work with KSB to develop suitable application for the blind and (visually impaired persons). These applications will be made available to this group through the provision of extra PCs at the KSB.

Recommendations

Recommendations with respect to the final period of the IUC with the UoN are the following:

- * Laboratories established under the Programme should remain intact, and effectively used, and items should not be distributed among different units or cannibalised. This is particularly true for the PCR laboratory.
- * Clear timelines should be set (and adhered to) for Ph.D. students who have not completed their research and/or thesis writing.
- * To think more proactively about the possibilities for future (research) partnerships and to effectively search for additional external funding. Developing priority research themes could guide such efforts.
- * To examine possibilities for enhanced inter-departmental collaboration, particularly in the field of open/distance education and to pay more attention to the demand side in this field.
- * UoN should take advantage of existing opportunities for networking with other VLIR-UOS universities in the South as well as the North. Joint research should be expanded so as to ensure the sustainability and further development of existing academic activities initiated under the VLIR-UOS Partnership Programme.



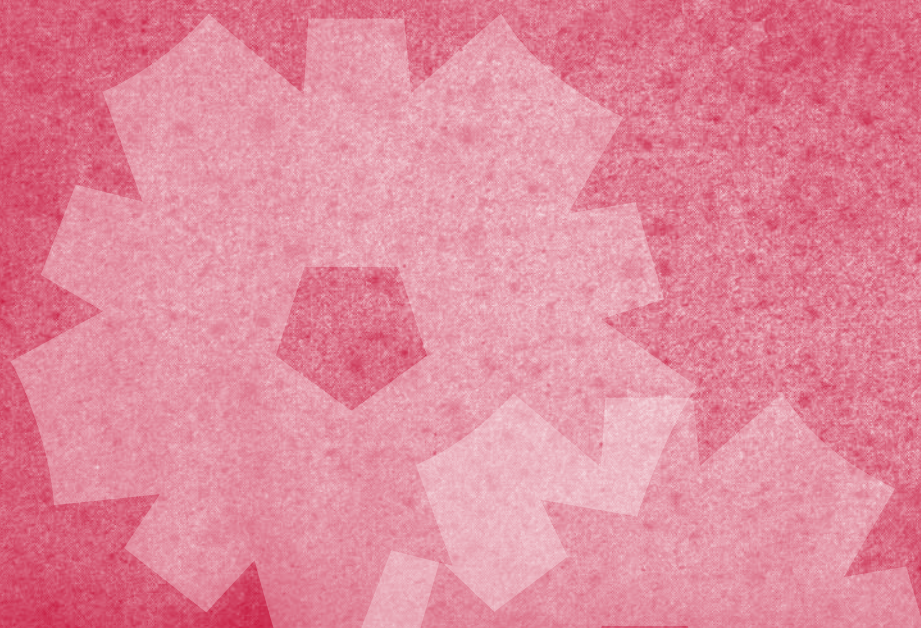
New areas and forms of networking in academic and research programs need to be explored.

- * There are opportunities for the UoN for offering technical assistance in both the public and private sectors in the region. Based on the foundation laid by the VLIR-UOS programme, the strengthened schools/departments need to market themselves vigorously in the country and region. Funds raised from such activities then used to support research activities and capacity building.

Recommendations concerning the overall IUC Programme level are the following:

- * To undertake a comparative analysis of the various IUC evaluations to effectively learn from these different evaluations for further improvement of currently ongoing programmes with universities elsewhere.
- * To review the existing set administration rules and regulations and examine possibilities for more flexibility and multi-annual funding.
- * To examine the notion of steering committees and how to make these more effective instruments for project monitoring and addressing problems arising in the course of Programme implementation.
- * To institutionalise a system of feedback from VLIR-UOS to the partner institutions in the South and the North as a means of improving Programme implementation.
- * To reconsider the concept of closing conferences and ceremonies and the timing of final Programme evaluations.
- * To pay attention to the issue of motivation of Flemish academics to continue to participate in collaboration activities with universities in developing countries
- * To consider a consistent policy of topping-up for project and programme management purposes.
- * There are a number of universities which still participate in or have “graduated” from UOS programmes within Eastern and Southern Africa region. Within the initiative of Inter-University Council of East Africa to harmonize academic programmes among universities within East Africa Community, it might be the right time to support an East Africa/Southern Africa dialogue on how best to form meaningful harmonized and joint academic development programmes in the region. The VLIR Secretariat could take a leading role in providing the platform.





APPENDICES





Appendix I : Terms of Reference

GENERAL PRINCIPLES OF THE PROGRAMME FOR INSTITUTIONAL UNIVERSITY COOPERATION

VLIR-UOS DECISION TO EVALUATE THE ONGOING COOPERATION WITH HUT, CTU, UoN AND UNZI

INTRODUCTION TO THE EVALUATION METHODOLOGY

OBJECTIVE AND SCOPE OF THE EVALUATION

EVALUATION CRITERIA

ACTORS INVOLVED

METHODOLOGY

ORGANISATION OF THE EVALUATION

TIMING OF THE EVALUATION

FOLLOW-UP TO THE EVALUATION

BUDGET



General principles of the Programme for Institutional University Cooperation

Background

The VLIR-UOS programme for Institutional University Cooperation (IUC) emanates from the Specific Agreement signed by the Belgian State Secretary for Development Cooperation and the VLIR-UOS on 16 May 1997. This agreement foresees a system of programme funding whereby, based on a Global Programme (1998-2002), the Belgian government provides each year funding for the implementation of an annual programme submitted by the VLIR-UOS. Once the government has approved the VLIR-UOS annual programme, it is the responsibility of the VLIR-UOS to implement the programme.

General description

The IUC programme is an inter-university cooperation programme of the Flemish universities, focused on the institutional needs and priorities of partner universities in the South. The IUC programme is in principle demand-oriented, and seeks to promote local ownership through the full involvement of the partner both in the design and implementation of the programme. The programme relates to only a few carefully selected partner universities in the South, hoping that synergy, added value and greater institutional impact can be achieved through the different IUC projects located in the same partner university.

Support is directed towards the institutional development of the partner university, the improvement of quality of local undergraduate and postgraduate education, and the encouragement of south-south academic and research linkages. Each partnership consists of different projects aiming at maximum institutional impact, apart from education and research-oriented projects. The partnership may also include some projects aimed at improving the organisation, administration and management of the university as a whole. The identification of the fields of cooperation is in principle demand-based, but demands can obviously only be met to the extent that Flemish expertise is available. Each partnership consists of a coherent set of interventions geared towards the development of the teaching and research capacity of the university, as well as its institutional management.

Objectives

The VLIR-UOS accepted as the core requirements for its IUC Programme the following :

- * **long-term cooperation** : in order for institutional cooperation to be effective, long-term partnerships need to be developed. Institutional partnerships are to cover a period of at least ten years;
- * **orientation on the institutional needs and priorities of the partner universities in the South** : donor support should start from the needs and priorities of the partner institution. Linkage projects and programmes need to fit well into the local policy environment of the Southern partner institution and therefore should respond to the priorities that have been identified by these institutions themselves. It is believed that only linkages based on projects to which the partner university attaches high priority, will be sustainable in the long run;



- * **ownership** : apart from their required participation in the process of project identification, partner institutions from the South also need to be fully involved in the process of implementation at all levels. A lack of strong involvement from beneficiary institutions has a negative impact on the successful implementation as well as on the sustainability of cooperation projects;
- * **concentration** : concentrating efforts in a limited number of partner institutions in the developing world leads to apparent advantages in terms of programme management, but concentration is also meant to allow for synergy between different projects of a same linkage in order to create an added value in terms of the expected broader institutional impact of the intervention;
- * **donor coordination** : the VLIR-UOS is convinced of the usefulness of donor coordination.

The VLIR-UOS programme for IUC aims at the provision of substantial support to a limited number of carefully selected partner universities in the developing world. This support is geared towards

- * the institutional development of the partner university;
- * the improvement of the quality of local education;
- * the development of local postgraduate education in the South;
- * the encouragement of south-south linkages.

Each partnership is broad in orientation, and includes the following :

- * different components (projects) make up the partnership;
- * all projects aim at a maximum of institutional impact;
- * the activities which are organised in the context of the partnership can involve all constituent parts of the university;
- * apart from direct support to the improvement of education and research the partnership can also contain projects which are aimed at improving the organisation, the administration and the management of the university as a whole;
- * the identification of the fields of cooperation within the partner programme is in principle based on the partner university's demands; these demands obviously can only be met in so far that the required expertise can be provided by the Flemish universities (demand driven approach);
- * each partner programme consists of a coherent set of interventions geared towards the development of the teaching and research capacity of the partner university, as well as its institutional management.

Fixed budgets and annual funding

The annual budget per partner university is € 745.000. As part of the phase-out process, the fixed annual budget decreases to 85%, 75% and 50% of a full budget for the activity programmes of year 8, 9 and 10 respectively.

While the partner programme represents a 5 year framework actual funding is based on the approval of annual activity programmes with no possibility to roll over possible balances to the following budget year.

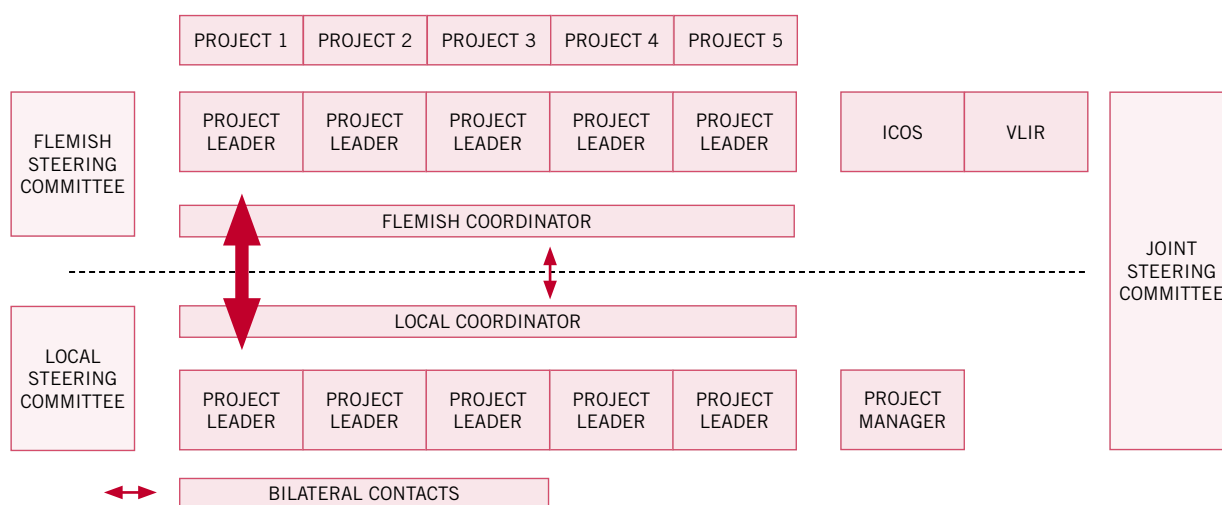
IUC management system at present

Summary outline of IUC management

The IUC management system is based on the following division of tasks:



- * **VLIR** is responsible for the programming – including the selection of partner universities –, monitoring and evaluation of the overall programme. VLIR is accountable to the Belgian government;
- * the implementation of a partner programme is delegated to a **Flemish university** which functions as the coordinating university in Flanders. The Flemish university of the VLIR appointed Flemish coordinator functions as the coordinating university in Flanders. Administratively, the university of the Flemish coordinator is responsible for the day-to-day management of the programme implementation based on an agreement signed by the Flemish coordinating university and the VLIR;
- * the **university of the Flemish coordinator and the partner university** have the responsibility to jointly manage the implementation of the partner programme and the constituent activity programmes based on an agreement signed by the Flemish coordinating university, the partner university and the VLIR;
- * the **partner university** also has to nominate a local coordinator who functions as the key responsible person from local side;
- * at the level of the **partner university** a full time professional manager is appointed in order to support the local coordinator, being an academic charged with numerous other responsibilities, in the various management duties associated with the implementation of a complex programme;
- * both in the North and the South a **steering committee** is established to coordinate the implementation of a partner programme. On a annual or bi annual basis both committees hold a **Joint Steering Committee Meeting (JSCM)**.



Project Cycle Management (PCM)

In 2003, VLIR-UOS has introduced the PCM-methodology in VLIR-UOS funded activities. This approach has called for a much more focused approach framed by the formulation of a logical framework matrix spanning a 5-year period and including measurable indicators.



The present IUC partner universities

List of the IUC partner universities at present

AFRICA

- * Tanzania : Sokoine University of Agriculture (SUA) (phased out)
- * Zambia : University of Zambia (UNZA) (phased out)
- * Kenya : University of Nairobi (UoN)
- * Kenya : Moi University (MU-K)
- * Zimbabwe : University of Zimbabwe (UNZI)
- * South-Africa : University of the Western Cape (UWC)
- * Ethiopia: Mekelle University (MU)
- * Ethiopia :Jimma University (JU)
- * Mozambique : University Eduardo Mondlane (UEM)

LATIN AMERICA

- * Bolivia : Universidad Mayor de San Simón (UMSS) (phased out)
- * Ecuador : Escuela Superior Politécnica Del Litoral (ESPOL)
- * Ecuador: Universidad de Cuenca (UCuenca)
- * Cuba: Universidad Central “Marta Abreu” de las Villas (UCLV)
- * Suriname : Anton de Kom Universiteit van Suriname (ADEKUS)

ASIA

- * Vietnam : Can Tho University (CTU)
- * Vietnam : Hanoi University of Technology (HUT)
- * the Philippines : the network of the Saint Louis University (SLU) and Benguet State University (BSU).

Take-off in different stages

- 1996 : preparation of the start of the IUC programme
- 1997 : SUA, UNZA and UMSS
- 1998 : UDSM, UON, UNZI, HUT and CTU
- 1999 : ESPOL and SLU/BSU
- 2003 : MU, UWC and UCLV
- 2007 : JU, MU-K, UCuenca
- 2008 : UEM, ADEKUS

IUC Programming cycle

Duration of the cooperation

1. In principle the cooperation with a partner university covers a period of maximum ten years: two time blocks of five years each. For each time block of five years a partner programme is to be drafted. Objectives have to be defined within a timeframe of five years.

2. Every three to five years the cooperation with a partner will be evaluated. Each year at least three partner universities will be evaluated. In 2000/2001, the IUC cooperation with the Universidad Mayor de San Simon (UMSS), Bolivia, the Hanoi University of Technology (HUT), Vietnam, and the University of Nairobi (UoN), Kenya, was evaluated, since these three universities were the first to start. It was jointly decided to accelerate the evaluation of the IUC cooperation with the University of Dar es Salaam (UDSM), Tanzania, with one year. Consequently, the IUC partnership



with UDSM was also evaluated in 2001. In 2002, the partner programmes with UoN, UNZI, ESPOL, SLU/BSU, HUT and CTU were evaluated. Following the inability to overcome the weaknesses brought out by the partnership with UDSM, VLIR-UOS decided to not enter into a second phase partner programme with UDSM.

3. On the condition of positive outcome of the evaluation exercise, a partner university can continue its cooperation for another five years. In case of negative outcome, the cooperation can be stopped, either immediately or after the first block of five years. Each evaluation is followed the next year by a control to check whether the results of the evaluation have been followed-up. Each evaluation can be followed by changes to the cooperation programme, both in terms of content and of budget. In terms of the Phase I and Phase II partner programme emphasis, the following can be observed:

- * Phase I is meant to focus on capacity building
- * Phase II is meant to focus on consolidation, application and phase-out

Partner Programme support opportunities

Following a period of 10 years of collaboration, limited funding is provided during a phase out process. More importantly however, is the possibility of IUC partner universities to submit proposals under the so called “IUC Research Initiative Projects”. In this way, support will be provided for quality research proposals undertaken by members of former IUC project teams. The modalities of this fund are currently being elaborated.

IUC Partner Programme support facilities

The support facilities explained underneath are funded by VLIR-UOS for the benefit of all ongoing and phasing out IUC partner universities.

Competitive funds

Apart from an annual budget, the partner programmes may respond to calls by VLIR to submit proposals under the ICT and **North South South Cooperation Fund** (NSSCF). Proposals are appraised on a competitive basis. Under the **ICT Fund** second hand pc’s are availed to the partner universities free of charge within a certain conceptual framework. Under the NSSCF, two or more IUC partner universities may join hands in developing a proposal that includes the involvement of a Flemish academic and builds upon the achievements of the partner programmes within the framework of SS collaboration.

International Foundation for Science (IFS)

With VLIR funding, IFS is able to fund deserving research proposals of young researchers of any eligible academic of the IUC partner universities that are recommended following an IFS review but for which IFS does not have the funds. Put differently, VLIR will be addressing the IFS funding gap as far as proposals from IUC partner universities are concerned.

International Network for the Availability of Scientific Publications (INASP)

VLIR is funding INASP in order to develop a curricula for training on bandwidth management. Under this initiative, the IUC partner universities will benefit from training at various levels in order to optimise available bandwidth.

Cross cutting initiatives

Cross cutting initiatives are workshops, training activities, study visits and similar



activities on matters of common interest in which participants of IUC partner universities can participate.

A full 17 year programme cycle framed by a comprehensive IUC tool box

With reference to the tables underneath, please find herewith an outline of the programme cycle both at the level of responsibilities during the different programme phases (table 1) and the overall timeframe (table 2).

Table 1. Programme cycle at the level of responsibilities during the different programme phases

Phase	Activities	Actors	Outputs
PROGRAMMING	Definition policy framework. Broad outlines of partner/programme types and guidelines for elaboration.	VLIR-UOS /DGDC	Typology of fundable projects. Conditions for acceptance.
IDENTIFICATION	Elaboration of programme/project idea. Analysis whether idea is fundable and matching is feasible.	PARTNER UNIVERSITY	Preliminary proposals submitted to VLIR-UOS.
APPRAISAL MATCHMAKING	Analysis against VLIR-UOS policy. Flemish interest based negotiations.	VLIR-UOS	Projects admitted for formulation. Formalised matching.
FORMULATION	Collection of data, consultation, detailed formulation	PROJECT LEADERS	Project proposals.
FUNDING DECISION		VLIR-UOS	Funded programme.
IMPLEMENTATION AND MONITORING	Annual planning Annual implementation Adaptation as required	ALL ACTORS BUT MAINLY PROJECT PARTNERS	Implementation as planned. Adapted when necessary.
EVALUATION (every 3 to 5 years)	Evaluation activities	ALL PARTIES AND EXTERNAL ACTORS	Evaluation report. Lessons learnt fed back to cycle

Table 2.

		PP ident. and for		Phase I PP Capacity Building					Phase II PP: Consolidation and Phase-out					Post IUC support					
	Year	0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Partner Programmes	Partner 1																		PP Objectives
	Partner 2																		PP Objectives
Other IUC supporting initiatives	ICT Fund													?	?	?	?	?	PP Objectives
	IFS													?	?	?	?	?	PP Objectives
	INASP													?	?	?	?	?	PP Objectives
	NSSCF													?	?	?	?	?	PP Objectives
	IUC Research Fund																		
	Cross cutting initiatives													?	?	?	?	?	PP Objectives

Evaluation



The IUC programme terminology

Activity programme

An *activity programme* gives an outline of the activities that will be implemented within the framework of cooperation between the Flemish universities and a given partner university with regard to Institutional University Cooperation for a given year, i.e. within the period of maximum twelve months. The activity programme is composed of the activities of the different projects. An activity programme as well as a partner programme is made up of projects. Previously, these were referred to as 'projects'.

In the framework of the activity programmes, VLIR-UOS was using a number of additional documents namely the '*Synthesis of the activity programme*' and the '*Detailed activity programme*'. From 2003 onwards, such documents have been replaced by internal monitoring systems to be applied by the various stakeholders involved in programme implementation.

Annual programme

In the framework of the IUC Programme VLIR-UOS will submit for approval by the Belgian Minister for Development Cooperation, annual programmes. An *annual programme* is composed of the activity programmes with the different partner institutions in Africa, Latin America and Asia.

Partner programme

A *partner programme* is composed of the successive activity programmes with a given partner university covering the entire period of cooperation (5-year period).

Global programme

A *global programme* is composed of the different partner programmes with all partner institutions in Africa, Latin America and Asia.

VLIR-UOS decision to evaluate the IUC partnership with HUT, CTU, Uon and UNZI

Taking into account the programming cycle of the IUC cooperation programmes, the 10 year cooperation based on earmarked funding with UMSS, UNZA and SUA has come to an end in March 2007. As a consequence, these three institutions will be the first to be submitted to a final evaluation.

Introduction to the evaluation methodology

Since 2003, the new partnerships differed with the partnerships that had been evaluated earlier. These differences related mainly to the following:

- * programme and project design based on the logical framework approach;
- * a more coherent programme focus with an in-built opportunity for a synergetic programme approach;
- * the introduction of a full time programme management position at the level of



the partner university;

- * a simplification of some financial (lump sum basis), compensations that are much more oriented towards the academics unit that are providing actual support and leadership.

Furthermore, VLIR-UOS has been developing more indicator based programmes and project files that elaborate upon the indicators developed earlier, and introduced the following additional dimensions:

- * a three layered approach whereby the projects fit into the programme that fits into the partner institutions that fits into a country context;
- * indicators that relate to broad based managerial issues;
- * an evaluation model that takes the log frame as a reference.

Objective and scope of the evaluation

Objective of the evaluation

The final evaluation is meant to generate conclusions that will allow:

- * the identification of strengths and weaknesses of each specific IUC collaboration with the three institutions in particular, and of the IUC programme in general;
- * VLIR-UOS to identify departments and/or research groups that have received substantial support from the IUC programme in Phase II and thus can present proposals for the “IUC Research Initiative Projects”
- * the formulation of recommendations to all stakeholders in terms of the follow up plan that has been elaborated by the Northern and Southern project leaders
- * to identify and comment upon possible venues for the future of the involved projects in view of establishing sustainability

Scope of the evaluation

the present implementation of the programme

- * evaluating the **global state of implementation** of the programme, both at the level of the overall programme and the constituent projects;
- * evaluating whether the activities, per project, have met the **objectives**, that had been defined by the actors involved, within the given timeframe and with the given means;
- * evaluating the **management** of the programme, both in Flanders and locally, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing;

the nature of the programme

- * evaluating the **quality, efficiency, efficacy, impact, development relevance and sustainability** of the programme in the light of the overall goal of the IUC Programme, being institutional capacity-building of the local university, as situated in the context of the needs of the local society;



- * evaluating the **cooperation** between all parties involved, and formulating, if necessary, recommendations that could be of interest for the partnerships that are still ongoing;

the position of the IUC programme within the international cooperation activities of the partner university

- * evaluating the **added value of the IUC Programme** for the partner university, in comparison to other ongoing donor cooperation programmes;

the follow up plan of the programme

- * evaluating the follow up plan as elaborated in the self assessment report (Format FI, self assessment per project), in view of the continuation of the different activities that have started up within the framework of the IUC programme (Phase I) and the consolidation of the results as aimed for in Phase 2.

Evaluation criteria

The logical framework

The logical framework will serve as the basic reference document in terms of the objectives and indicators specified to assess actual progress against the objectives and results formulated.

All project leaders will therefore in the framework of the self-assessment report against the key indicators as well as the assumptions formulated at project design stage.

Descriptive indicators of results

In order to allow the usage of some 'standard indicators', all projects will report against these indicators. Such a reporting will furthermore greatly contribute to documenting the actual outputs and retaining such information in a database that will be annually updated.

The evaluation will be focused on **seven areas of key (programme/project) results areas (KRAs)**, each one specified in terms of its corresponding indicators. Where possible, both quantitative and full descriptive data will be obtained and used as a basis for evaluation :

Key result areas	Indicators (quantitative and full descriptive data)
KRA 1: Research	• Articles in international peer reviewed journals • Articles in national peer reviewed journals • Conference proceedings (full paper) • Conference abstracts • Chapters in books (based on peer review) • Books with international distribution (author or editor) • Working/technical papers/popularising literature/articles in national journals, electronic journals etc. • Conference contributions (posters, lectures) • Patents. • Other



KRA 2: Teaching	• Number of courses/training programmes developed • New or substantially updated curriculum • Textbooks development • Learning packages developed (distance learning, CD-rom etc.) • Laboratory manuals • Excursion guides • Other
KRA 3: Extension and out-reach	• Leaflets, flyers or posters for extension • Manuals or technical guides • Workshop or training modules package • Audio visual extension materials • Consultancy / contract research • Policy advice/papers • Other
KRA 4: Management	• New institutional procedures / policies • Lab or departmental management inputs • Systems development (e-management, software etc.) • Research protocols • Other
KRA 5: Human resources development	• BSc. • MSc. • PhD. • Pre-doc • Training in Belgium • Other
KRA 6: Infrastructure Management	• Physical infrastructure (incl. land) • ICT-equipment • Library equipment (incl. books) • Laboratory equipment • Transport
KRA 7: Mobilisation of additional resources/opportunities	• Flemish travel grants • Flemish PhDs • Other PhDs • Spin off projects • Other
7. Other	

With input of the VLIR-UOS-secretariat and the concerned stakeholders, this table is to be completed for each project of each partner programme. In case it is impossible to complete the table in details, the evaluation commission can make its evaluation at the level of the main categories or subcategories.



Qualitative evaluation criteria

In addition to the primarily descriptive profile of results both per project and in general terms, the evaluation commission will be invited to evaluate these results in qualitative terms applying different qualitative criteria and a five-point scale.

Qualitative evaluation criteria

Per project

Criterion	Indicators
1. Quality	This is the main criterion, being the result of all other criteria. <u>Possible indicators of "quality":</u> • quality of research : the extent to which the results have been incorporated in local or international refereed journals • quality of education : the extent to which alumni easily get a job which fits their education profile; the number of fellowships acquired from foundations • quality of rendering services to society : the extent to which the university/faculty/department is involved in feasibility studies/consultancies • job opportunities • strategic vision
2. Effectiveness	the extent to which the specific objectives have been achieved (the level of the results)
3. Efficiency	The relationship between the objectives and the means used to reach the objectives. The degree to which the installed capacity (human/physical/financial) is used; goals/means ratio in human, physical and financial resources <u>Possible indicators of "efficiency":</u> At the level of the programme : the extent of flexibility in the programme implementation, e.g. reallocation of resources during implementation
4. Impact	Not just actual but also (given time limitations) potential impact (at level of goals), looking at consultancy, policy advice and accreditation models <u>Possible indicators of "impact":</u> • impact at the level of the private sector : the amount of money earned on the market • impact at policy level : the extent to which academics, involved in the IUC programme, are called upon by the government for policy advice • impact at the level of the own university or other universities : - renewed curriculum functions as example for other universities/ departments - the new style of teaching has become a model for teaching (e.g. the systematic use of teaching in combination with laboratory work)
5. Development relevance	the extent to which the programme/project addresses immediate and significant problems of the community, looking at the amount of self-finance, demand from state and private actors
6. Sustainability	Especially financial and institutional sustainability <u>Possible indicators of institutional commitment in the South:</u> • co-funding by the partner university (matching funds) • incorporation of costs into the budget of the partner university • capacity to attract new funds • retention of highly qualified staff • the partner university sets aside funds for operations and maintenance of physical infrastructure <u>Possible indicators of mutual interest:</u> • do the Flemish universities commit their own university funds to the programme, for instance by giving fellowships or by allowing academics to go to the field ? • are Flemish academics personally committed (e.g. spend their holidays working in the partner university) ? • are there joint research projects which are interesting both to the Northern and Southern academics involved ? • do the partner universities also commit their own funds to the programme (matching funds)? • is there a good quality follow up plan for implementation after the 10 year period of partnership with earmarked funding ? (see self assessment reports)



A five-point evaluation scale

A five-point evaluation scale is to be used, both when judging the results in the above areas in general terms, and when evaluating the performance of the projects and the programme as a whole in terms of the qualitative criteria. The scale is as follows:

- 1 = (very) poor
- 2 = insufficient/low
- 3 = sufficient
- 4 = good/high
- 5 = excellent/very high.

These scores – expressing in quantitative terms an overall and synthetic yet differentiated qualitative judgement – should facilitate the task of evaluation.

In terms of collaboration at the level of the programme, the following criteria can be applied as a reference. No scores will be applied, only a qualitative elaboration.

Criterion	Indicators
1. Efficiency	The relationship between the objectives and the means used to reach the objectives. The use and application of the means earmarked for collaboration. The actual net result in terms of the achieved efficiency through collaboration. The extent to which collaboration can contribute to solving institutional needs and problems. <i>Possible indicators of “efficiency”:</i> At the level of the programme : existence of systems for continuous alertness for opportunities to enhance efficiency through cost-sharing/economies of scale etc.
2. Impact	Not just actual but also (given time limitations) potential impact. <i>Possible indicators of “impact”:</i> • impact at the institutional level : the extent to which the col-laboration has sparked other departments to initiate inter-university collaboration, joint capacity building, fund raising etc. • impact at regional developmental level: the extent to which the col-laboration has led to joint developmental activities or similar collaborative models at the regional level • impact at policy level : the extent to which the collaboration has raised interest of policy makers and academics, and SLU/BSU are called upon or are pro-actively developing collaboration models that could be fed into policy advice
3. Development relevance	the extent to which the planned collaboration is addressing immediate and significant problems and needs of the concerned partners as well as regional and national policy makers.
4. Sustainability	Especially financial and institutional sustainability <i>Possible indicators of institutional commitment to collaboration:</i> • feedback and/or participation in each others strategic planning • strengths and weaknesses of two institutions in terms of institutionalising collaboration • intensification and/or formalisation of inter-university consultations • references in external and internal documents • joint proposals (fund raising, research) • collaboration and exchanges outside of VLIR-UOS-programme • presence of a detailed follow up plan (see self assessment reports)



The collaboration as a whole: management and related issues

A more elaborate list of indicators to review the management and cooperation aspects of the partnership will be provided to stakeholders and the external evaluators. This list is partly drawn from the TOR developed for the audit of the management of the IUC partnership with UoN, as well as the basic IUC concept.

More specifically, the following areas are among the issues to be reviewed:

- * Overall assessment of the programme management (North and South)
- * System development (manuals, synergy approach, interim monitoring and reporting etc.)
- * Management issues related to actual implementation (financial information flow, procurement, facilitation of visits etc.)
- * Financial management
- * Academic cooperation
- * PR and visibility
- * Synergy and coherence of the programme

Actors involved

General

The following actors will be involved in the evaluation :

- * the members of the evaluation commissions;
- * the Northern stakeholders involved in the three ongoing IUC cooperation programmes;
- * the Southern stakeholders involved in the three ongoing IUC cooperation programmes;
- * the IUC Commission (still to be composed);
- * the Bureau UOS of VLIR-UOS and the VLIR-UOS;
- * the Direction General for Development Cooperation (DGDC), i.e. the Belgian government administration for international cooperation.

The evaluation commission

Management, academic content and country context

Ideally, the following expertise would be represented in the evaluation commission:

- * a development management expert who is familiar with processes of institutional/organisational development, capacity building and methodological issues in general;
- * an academic expert regarding the core theme of the partner programme such that the academic quality may be assessed;
- * a country expert who is familiar with the national issues at hand in terms of higher education and research in the country concerned.

In view however of the fact that:

- * with each additional team member the evaluation process will be more costly and complex;



- * VLIR-UOS wishes to maintain a balance between the self-assessment and external assessment of programme implementation;
- * not in all the partnerships, a single academic theme can be identified around which expertise could be mobilised

it has been decided not to compose a three member commission but rather ensure that all the above field can be accommodated by the joined field of expertise of two members of the evaluation commission to be composed.

The experts should be neutral, and have no relation with the universities involved - neither the Flemish universities involved nor the partner university - or the IUC partnership.

The experts should have a proven experience and expertise with evaluation.

The Bureau UOS will decide on the composition of the evaluation commission, based on suggestions from the Flemish and the partner universities, as well as from the VLIR-UOS-secretariat.

Division of tasks among the members of the evaluation commissions

The evaluation is to be undertaken by both members of the evaluation commission who are expected to function as a team.

The international cooperation expert

The international cooperation expert will act as team leader (chairman). In this capacity he/she will lead the meetings that have been programmed and will coordinate the report drafting. He/she will be invited to use his/her experience with international cooperation in the field of higher education and research as reference for the evaluation, especially when formulating recommendations for improvement of the global set-up and management of the programme.

The country expert

The country expert will be invited to situate the partner university and its IUC Programme in its larger national context, taking into account local legislation relating to higher education, etc.

The Northern stakeholders involved in the three phasing out IUC cooperation programmes

What is meant by the Northern stakeholders is : all persons from the Flemish universities who are involved in one of the phasing out IUC cooperation programmes (SUA, UNZA and UMSS). This means : the top management of the Flemish coordinating university, the Flemish coordinator, the Flemish project leaders and team members, Ph.D. student promoters, the Institutional Coordinator for University Development Cooperation of the Flemish coordinating university (the so-called ICOS), the financial officer(s) of the Flemish coordinating university, the permanent expert(s) (if applicable), the IUC desk officer etc.



The Southern stakeholders involved in the three phasing out IUC cooperation programmes

What is meant by the Southern stakeholders is : all persons from the partner university and the local community who are involved in the respective IUC partnership. This means :

- * *the Southern stakeholders within the partner university :*
the top management of the partner university, the authorities at faculty level, the local coordinator, the programme manager, the local project leaders, their deputies (if applicable) and team members, the staff of the local coordinating unit of the IUC programme (secretaries, accountants, ...), the bursar, the students funded by the programme, the student supervisors and/or promoters, technicians, staff from other donor-sponsored cooperation programmes being implemented at the partner university, etc.;
- * *other Southern stakeholders :*
representatives from central, regional and local government agencies and from civic society (e.g. local chambers of industry, employers' association, ...), officials of the Ministry of Education and of Foreign Affairs, and of the Belgian Embassy,
...

The IUC Commission

In order to have more systematic follow-up of the IUC partner programmes, especially relating to its academic content, an IUC Commission will be installed by VLIR-UOS. The IUC Commission will be an advisory body that will advise the Bureau of the VLIR-UOS on the IUC Programme.

The VLIR-UOS will create this commission in the coming months.

The final evaluation reports will be submitted, for discussion, to the IUC Commission.

The VLIR-UOS-secretariat

The VLIR-UOS-secretariat will function as organiser of the evaluations, as well as resource centre for the commission members.

DGDC

DGDC will be invited to have a separate discussion with the evaluation commission, if so desired, and to participate in debriefing meetings with the evaluation commission.

Methodology

Evaluation mission

An evaluation mission will be conducted by an external commission for each of the three phasing out IUC cooperation programmes. This evaluation commission will have discussions with

- * the Northern stakeholders of the resp. phasing out IUC cooperation programme;
- * the Southern stakeholders of the resp. phasing out IUC cooperation programme;



- * the VLIR-UOS and the Direction General for International Cooperation (DGDC);
- * the Belgian Embassy and DGDC section in the partner country;
- * if possible but highly advised : the department for university education and/or research of the Ministry of Education/Research of the partner country and/or other actors in the field;
- * any other relevant stakeholders.

The team will also visit all relevant facilities of the university.

Consistent with the mid-term evaluation methodology, VLIR-UOS has developed a final evaluation methodology. This includes a briefing of the international during a one day mission to Brussels. As to giving the opportunity to the evaluation commission members to have discussions about the resp. partnership with the Northern stakeholders, these discussions are planned to be held at the partner university at the end of the evaluation mission. Therefore, preferably, the Northern stakeholders or a delegation should be at the partner university at the very end of the evaluation mission, for two reasons :

- * to have in-depth discussions with the evaluation commission, separately from the Southern stakeholders, to allow the evaluation commission to have a balanced view which takes into account the viewpoints of both parties;
- * to discuss with the southern stakeholders how to react to and implement the evaluation commission's conclusions and recommendations, thereby focusing on the future. This discussion is to be held in the form of a joint steering committee meeting.

A representative of the VLIR-UOS-secretariat will also be present at the end of the mission to serve as resource centre and in order to elucidate in situ aspects of the programme which the commission members as outsiders would otherwise not capture well enough, and to clarify the expectations of VLIR-UOS vis-à-vis the commission in more detailed terms.

At the end of the mission the evaluation commission will present its draft conclusions and recommendations to all stakeholders.

Inputs

Input into the evaluation will be provided through :

- * an analysis of *documents* by the evaluation commission, in particular programme documents (reports) and the self-assessment reports which will have to be prepared prior to the mission of the evaluation commission;
- * *focused interviews* of the evaluation commission with various stakeholders;
- * *visits* of the evaluation commission to the relevant facilities of the partner university and the site of development projects with a link to the IUC programme.

Documents

Programme documents

Prior to its mission the evaluation commission will receive from VLIR-UOS, apart from basic information on the IUC Programme, a number of documents relating to the respective IUC partnership, such as the university strategy paper, the IUC partner programme, annual reports, etc.



Self-assessment reports

The stakeholders in a given IUC partnership will be invited, prior to the mission of the evaluation commission, to make a self-assessment and to report on it to the commission in the form of a number of self-assessment reports.

Contrary to the evaluation process of 2001 and 2002, the VLIR-UOS-secretariat aims at producing project files that contains basic information (financial, scholars etc.)

The objective of the self-assessment is threefold :

- * interim reporting against the **logical framework**;
- * consolidation and/or completion of some **quantitative and qualitative information** to the evaluation commission to complement the information contained in the formal programme documents;
- * stimulate the **internal quality assurance** by a strengths-weaknesses analysis by all parties involved;
- * **internal preparation for the discussions with the evaluation commission** and its visit to the partner university.

The following formats were sent to the different stakeholders:

Format 1 or F1 : Self-assessment per project (See annex 1 to these ToR's)

This is a format that has to be completed for each project, by the Flemish and local project leader jointly, in consultation with their team members.

Through this format, reporting is done on the following:

- * accomplishments in view of objectives and indicators;
- * assumptions at the start of Phase II, the development over time and the action that has been taken in view of possible developments;
- * KRA's as in the database;
- * qualitative appreciation;
- * self-scoring KRA's;
- * self-scoring cooperation dynamics;
- * definition of capacity building recipients;
- * effects in the North;
- * sustainability and overall outlook;
- * follow-up plan;
- * and others....

Format 2 of F2 : Self assessment of the partnership (See annex 2 to these ToR's)

This format has to be completed separately by the Flemish and the local coordinator, jointly with the respective steering committee.

Through this format, reporting is done mainly on the following issues:

- * main effects and assessment;
- * lessons learned;
- * hindsight;
- * impact over the full 10 year period;
- * synergy;
- * SWOT;
- * financial and overall management of the IUC programme;
- * outlook and other recommendations;
- * and others...



Focussed interviews with all stakeholders

The evaluation commission members will visit the partner university where they will have focused discussions with all stakeholders of the IUC partnership, both the Southern and Northern ones.

Visits

The evaluation commission will also visit all relevant facilities of the university, with special attention to infrastructure, the central offices involved in the programme, the classrooms and laboratories involved, research sites, field stations, development projects with a link to the IUC programme, ...

Debriefing meeting of the evaluation mission with the stakeholders

At the end of the mission the evaluation commission will discuss its preliminary findings – general conclusions and recommendations – during a meeting with all stakeholders, both the Northern and the Southern ones.

Evaluation report

Each evaluation commission will draft an evaluation report, in English, based on the written material and the discussions and visits during the mission.

The draft report will be submitted, for comments, via the VLIR-UOS to the respective Flemish and local coordinator. It will be up to the two coordinators to coordinate the reactions to this draft report. The evaluation commission will decide, given its autonomy, whether or not to take into account the comments received. The final report will be submitted to the VLIR-UOS.

Organisation of the evaluation

- * The evaluation commissions will be composed by the Bureau UOS of the VLIR-UOS, based on suggestions from the Flemish and the partner universities, as well as of the VLIR-UOS-secretariat.
- * The evaluation commissions will receive from the VLIR-UOS, apart from basic information on the IUC Programme, a set of documents relating to the respective IUC partnership.
- * The Northern and Southern stakeholders of each of the three IUC partnerships received the formats for the self-assessment reports end of December 2007. The reports will have to be submitted to the VLIR-UOS-secretariat at the latest on **30 June 2008**.
- * The partner universities will be invited to draft the programme of the evaluation missions, taking into account the possible requests formulated by the resp. evaluation commission.
- * The evaluation missions will be organised in October 2008 (HUT), December 2008 (CTU) and early 2009 (UoN and UNZI), each of them lasting at least one week.



- * At the end of each mission, one or more days will be reserved for discussions between the evaluation commission and (a delegation of) the Northern stakeholders who will be invited to be on the spot at that moment.
- * At the very end of the mission, the evaluation commission will discuss its preliminary conclusions and recommendations at length with the Southern and the Northern stakeholders. It is advised that this debriefing meeting be followed by a joint steering committee meeting. The evaluators are not supposed to participate in this joint steering committee meeting.
- * The evaluation commission members will submit their report within three weeks after their return from the mission. This draft report will be submitted, for comments, via the VLIR-UOS to the respective Flemish and local coordinator. The commission will decide whether or not to change its final report based on the comments received.
- * Submission of the final report by the evaluation commission to the VLIR-UOS.

Timing of the evaluation

Action	Actor	Time			
		HUT	CTU	UoN	UNZI
Phase Out Workshop (1 October 2007)	VLIR-UOS secretariat	1 October 2007			
Mailing of the formats for the self-assessment reports to the stakeholders	VLIR-UOS secretariat	21 December 2007			
Mailing of the database excel forms	VLIR-UOS secretariat	29 January 2008			
Mailing of the database contracts	VLIR-UOS secretariat	21/05/2008	21/05/2008	a.s.a.p.	a.s.a.p.
Mailing of the terms of reference to the stakeholders	VLIR-UOS secretariat	30/05/2008	30/05/2008		
Composition of the evaluation commissions	Bureau UOS of the VLIR-UOS, based on the suggestions of the resp. partner university, Flemish coordinating university, and the VLIR-UOS-UDC-secretariat	23 June 2008	23 June 2008	September 2008	September 2008
Mailing of the resp. IUC partnership documents to the members of the evaluation commission	VLIR-UOS secretariat	Week of 26 June 2008	Week of 26 June 2008	End of September 2008	End of September 2008



Action	Actor	Time			
		HUT	CTU	UoN	UNZI
Deadline for submission of the self-assessment reports to the VLIR-UOS-secretariat	- The general information report is to be submitted by the Flemish coordinator to the VLIR-UOS-secretariat - The compilation of self-assessment reports per project is to be submitted by the Flemish coordinator to the VLIR-UOS-secretariat - The collective self-assessment report of the Southern stakeholders within the partner university is to be submitted by the local coordinator to the VLIR-UOS-secretariat - The collective self-assessment report of the Northern stakeholders is to be submitted by the Flemish coordinator to the VLIR-UOS-secretariat	30 June 2008	30 June 2008	30 June 2008	30 June 2008
Preparation of the missions of the evaluation commissions (indicative dates)	VLIR-UOS-secretariat	July 2008	July 2008	October 2008	October 2008
Drafting of the programme for the evaluation commissions (indicative dates)	Partner universities	July 2008	July 2008	October 2008	October 2008
Contacts of Evaluation Commission Leader with Flemish PL (indicative dates)	- the evaluation commissions - the Northern stakeholders - VLIR-UOS and DGDC	August-September 2008	September-November 2008	November-December 2008	November-December 2008
Evaluation missions (indicative dates)	- the evaluation commissions - the Southern stakeholders - the Northern stakeholders - VLIR-UOS and DGDC	20/10/2008 up until 02/11/2008	01/12 up until 09/12/2008	To be defined	To be defined
Local debriefing	- the evaluation commissions - the Southern stakeholders - the Northern stakeholders - VLIR-UOS and DGDC	To be defined	To be defined	To be defined	To be defined
Joint Steering Committee Meeting	- the evaluation commissions - the Southern stakeholders - the Northern stakeholders - VLIR-UOS and DGDC	To be defined	To be defined	To be defined	To be defined
Submission of the draft evaluation reports to the Flemish and local coordinators	the evaluation commissions, via the VLIR-UOS-secretariat	4 weeks after the Evaluation Mission	4 weeks after the Evaluation Mission	4 weeks after the Evaluation Mission	4 weeks after the Evaluation Mission
Commenting on the draft evaluation report	- the Northern stakeholders, under the coordinatorship of the Flemish coordinator - the Southern stakeholders, under the coordinatorship of the local coordinator - VLIR-UOS	Within 4 weeks after reception of the draft report	Within 4 weeks after reception of the draft report	Within 4 weeks after reception of the draft report	Within 4 weeks after reception of the draft report
Finalising the evaluation report and Submission to VLIR-UOS	the evaluation commissions	Between 2 and 4 months after performance of the Evaluation	Between 2 and 4 months after performance of the Evaluation	Between 2 and 4 months after performance of the Evaluation	Between 2 and 4 months after performance of the Evaluation



Follow-up to the evaluation

Three years after the final evaluation and the closing of the 10 year IUC collaboration, VLIR-UOS intends to organize a follow up survey. This survey would allow :

- * to determine whether the impact of the IUC programme still can be perceived in order of research activities, networking and capacity building activities among others ;
- * to determine whether the follow up plan as elaborated in the self assessment reports has been used in order to establish continuation of the IUC programme after the earmarked funding ;
- * to determine whether the observations and recommendations made by the evaluation commission on the follow up plan during the final evaluation have been taken into consideration by the different stakeholders.

Budget

All costs linked to the evaluation by the evaluators (fee, travel, board and lodging) - except the ones listed below - will be covered by the VLIR-UOS.

The organisation costs linked to the mission of the evaluation commissions (e.g. lunches, local transport, etc.) are to be covered by the partner universities. They can book these costs on their respective IUC budget.

The costs of the Flemish stakeholders and of VLIR-UOS participating in one or more of the missions will be born by VLIR-UOS.

The costs of the DGDC representatives participating in one or more of the missions will be born by DGDC.



Appendix II: Flemish Interuniversity Council and IUC Programme

VLIR

For over 30 years, the Vlaamse Interuniversitaire Raad (VLIR) (Flemish Interuniversity Council) has fostered the development of member universities. Beginning in the 1980s, the VLIR member universities began to participate in an advisory capacity in development cooperation programmes administered by the General Directorate for Development Cooperation (now the Directorate-General for Development Cooperation (DGDC)).

During the past decade, VLIR-UOS has been given significantly greater responsibility for administering programmes and managing federal funds for University Development Cooperation (UOS) on behalf of the Flemish universities. VLIR-UOS operates under authority of the Minister for Development Cooperation based on an approved 5-year work plan. VLIR-UOS prepares and submits an UDC annual programme. Upon approval by the Government, funds are released to VLIR-UOS for the implementation of the annual programme.

Under this arrangement, Flemish universities may propose activities. If selected, they are charged with the responsibility for implementing the proposed activities. VLIR-UOS retains responsibility for selecting universities to implement activities, and for monitoring and evaluation. VLIR-UOS is also responsible for financial and programmatic accountability.

The IUC Programme

The VLIR-UOS programme for Institutional University Cooperation (IUC) finds its origin in the Specific Agreement signed by the Belgian State Secretary for Development Cooperation and VLIR-UOS on 16 May 1997. With this agreement, a system of programme funding was introduced whereby the Belgian Government would provide funding each year for the implementation of an annual programme submitted by VLIR-UOS. Once this annual programme is approved by the Government, VLIR-UOS is responsible for its implementation.

The IUC programme is an interuniversity cooperation programme of Flemish universities, focused on the institutional needs and priorities of carefully selected partner universities in the South. The general objective of the Programme reads as “Empowering the local university as institution to better fulfil its role as development actor in society”.

It is in principle demand-oriented: the identification of the fields of cooperation within the partner programme is in principle based on the partner university’s demands. At the same time, there is the understanding that demands can obviously only be met to the extent that Flemish expertise is available. The programme seeks to promote local ownership through the full involvement of the partner both in the design and in the implementation of the programme. 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. Support is directed towards the institutional development of the partner university, the improvement of the quality of local undergraduate and postgraduate education, and the encouragement of South-



South academic and research linkages. The partnership may also include some projects aimed at improving the organisation, administration and management of the university as a whole. Activities organised in the context of the partnership can involve all constituent parts of the university. The programme anticipates that synergy, added value and greater institutional impact can be achieved through the different IUC projects located in the same partner university.

VLIR-UOS accepted the following as the core requirements for the IUC programme:

- * **Long-term cooperation:** in order for institutional cooperation to be effective, long-term partnerships need to be developed. Institutional partnerships are to cover a period of at least ten years;
- * **Orientation towards the institutional needs and priorities of the partner universities in the South:** donor support should start from the needs and priorities of the partner institution. Linkage projects and programmes need to fit well into the local policy environment of the Southern partner institution and therefore should respond to the priorities that have been identified by these institutions themselves. It is believed that only linkages based on projects to which the partner university attaches high priority, will be sustainable in the long run;
- * **Ownership:** apart from their required participation in the process of project identification, partner institutions from the South also need to be fully involved in the process of implementation at all levels. A lack of strong involvement from beneficiary institutions has a negative impact on the successful implementation as well as on the sustainability of cooperation projects;
- * **Concentration:** concentrating efforts in a limited number of partner institutions in the South leads to apparent advantages in terms of programme management, but concentration is also meant to allow for synergy between different projects with the same linkage in order to create added value in terms of the expected broader institutional impact of the intervention;
- * **Donor coordination:** VLIR-UOS is convinced of the usefulness of donor coordination.

The IUC programme support is geared towards:

- * the institutional development of the partner university;
- * the improvement of the quality of local education;
- * the development of local postgraduate education in the South;
- * the encouragement of South-South linkages.

The IUC management system is based on the following division of tasks:

- * VLIR-UOS is responsible for the programming – including the selection of partner universities – monitoring and evaluation of the overall programme. VLIR-UOS is accountable to the Belgian Government;
- * implementation of a partner programme is delegated to a Flemish university that functions as the coordinating university in Flanders. This Flemish university appoints the Flemish coordinator who is responsible for the day-to-day management of the programme implementation, based on an agreement signed by the Flemish coordinating university and VLIR-UOS;



- * the university of the Flemish coordinator and the partner university have the responsibility of jointly managing the implementation of the partner programme and the constituent activity programmes based on an agreement signed by the Flemish coordinating university, the partner university and VLIR-UOS;
- * the partner university also has to nominate a local coordinator who functions as the key responsible person from the local side;
- * at the level of the partner university, a full-time professional manager (an academic) is appointed in order to support the local coordinator, charged with numerous other responsibilities regarding the various management duties associated with the implementation of a complex programme;
- * both in the North and the South a steering committee is established to coordinate the implementation of a partner programme. On an annual or bi-annual basis, both committees hold a Joint Steering Committee Meeting (JSCM).

Currently, the IUC programme consists of the following 10 full-fledged partnership programmes:

Africa

- * Ethiopia: Mekelle University (MU)
- * Ethiopia: Jimma University (JU)
- * Kenya: Moi University (MU)
- * Mozambique: Eduardo Mondlane University (EMU)
- * South-Africa: University of the Western Cape (UWC)

Latin America

- * Cuba: Universidad Central 'Marta Abreu' de Las Villas (UCLV)
- * Ecuador: Escuela Superior Politécnica Del Litoral (ESPOL)
- * Ecuador: Cuenca University (CU)
- * Surinam: Anton de Kom University of Surinam (ADEKUS)

Asia

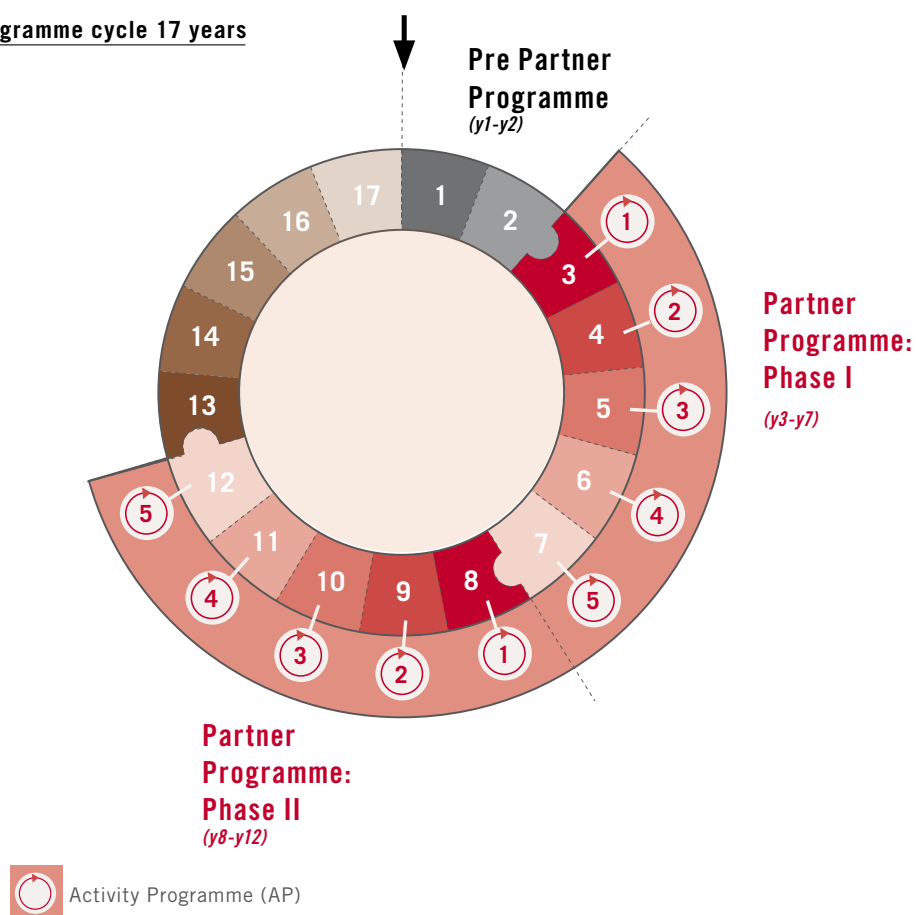
- * Philippines: the network of the Saint Louis University (SLU) and Benguet State University (BSU).

The partnership programmes with the University of Zambia, the Universidad Mayor de San Simon in Bolivia and the Sokoine University of Agriculture in Tanzania were phased out in 2006, having completed two phases of five years. The partnerships with the University of Nairobi in Kenya, the University of Zimbabwe and Can Tho University and Hanoi University of Technology in Vietnam were phased out in 2007.



Since the IUC Annual Programme for 2003, the annual investment for a fully-fledged university in the context of the IUC Programme has been € 745,000, i.e. for 100% of the costs, for a period of seven. As of year 8, funding will decline to 85% in year 8, 75% in year 9 and in year 10 to 50% of the former annual budget (i.e. a maximum of € 375,000). With this reduction in funding it should be clear to the partner universities that they will have to take over within the near future and that they will have to prepare themselves for this takeover. In the context of the IUC Programme support can be given to the partner in its search for new funds or partners. After a period of ten years the partner university can access a number of ex-post funds on a competitive basis and participate in transversal activities organised at the overall IUC Programme level. Summarized, the programming cycle is the following:

Programme cycle 17 years





Appendix III: Interviewees

Name	Faculty/institutions
Chepilwony, Johan K.	Senior librarian, systems administrator for the libraru
Chepkoech, Caroline	Computer Centre, Chief ICT officer, former M.Sc. student
Eisendrath, Georges	Flemish Programme coordinator
Gakuu, Christopher	School of Continuing and Distance Education (SCDE), former Ph.D. students
Gontier, Christopher	Ph.D. student Reproductive Health/HIV-AIDS project
Kariuki, Paul	Computer Centre, former M.Sc. student
Kiama, Teresa	Ph.D. student Reproductive Health/HIV-AIDS project
Kiriti, Paul	M.Sc. student computer science project
Koedam, Nico	Laboratory of General Botany and Nature Management, VUB
Liboton, A.	Project leader VUB, OPLN project
Machasia, Edward	Deputy University Librarian (adm.)
Manderick, Bernard	Project leader VUB, computer science project
Mathangani, Salome N.	University librarian
Mavuti, Kenneth	Programme coordinator, project leader AQUA project
Miriti, Evans	M.Sc. student computer science project
Muchiri Patricia	Department of Extramural studies, Ph.D. student
Muchiri, Lucy	Ph.D. student Reproductive Health/HIV-AIDS project
Mwangi, Josephine	Computer Centre, former M.Sc. student
Obeko, Robert	OPLN, former M.Sc. student (1st phase), current Ph.D. student
Omwenga, E.	Director Computer Centre, Project leader OPLN and ICT project
Temmerman, Marleen	Project Leader, HIV/RH project
Vanreusel, Anne	Marine Biology Research Group, Biology Department, UGent
Wagacha, Peter	Deputy project leader CSOC project
Wausi, Agnes	ICT Centre, former M.Sc. student (1st phase), current Ph.D. student
Were, Jacinta	Deputy University Librarian (techn.)



Appendix IV: References

Name	Faculty/institutions
Carpenter, Julie et al	Evaluation of selected ICT-related projects and feasibility study concerning a transversal ICT programme, Education for Change, South Research, VLIR UOS, September 2007 (including annexes)
Government of Kenya and UNICEF	Comprehensive Education Sector Analysis, Nairobi, 1994
Kilemi, M. Njuguni, N. Ngome, C. & Others	Public and Private Universities in Kenya, Oxford and Nairobi, James Currey and East African Educational Publishers, 2007
Land, Gerhard van 't and Andrew Akeye	Report of an Advisory assignment regarding the local management of the institutional university cooperation (IUC) Programme with the University of Nairobi, ETC East Africa Ltd, Nairobi, 7 February 2005
Ministry of Education, Science and Technology	Report of the Education Sector Review and Development, Nairobi, 2003
Mutunga, Peter K. and Paul G. de Nooijer	VLIR-UOS Programming Mission report: Moi University Kenya, 12 May 2006
Republic of Kenya	Economic Survey, 2008, Nairobi, Government Printer
UoN	Narrative report for the ICT-ILIB for the financial year 2007/2008
UoN	Narrative report for the Open Learning Project for the financial year 2007/2008
UoN	VLIR project: Report on Library Automation Unit, October 2008
UoN	Self Assessment per Project: Project 4. Open Learning project
VLIR-UOS	VLIR-UOS CTG ICT Fund, Summary sheet, University of Nairobi proposal
VLIR-UOS	RIP 2009 Call; Format for an IUC RIP Proposal, University of Nairobi proposal
VLIR-UOS	Institutional Cooperation (IUC) with the University of Nairobi, Draft Terms of Reference for an Advisory assignment regarding the local management of the institutional university cooperation (IUC) Programme, December 2004
VUB	Annual Activity Report 2001
VUB	Annual Activity Report 2002
VUB	Annual Activity Report 2003
VUB	Annual Activity Report 2004
VUB	Annual Activity Report 2005
VUB	Annual Activity Report 2006



Appendix V: Selected publications and conference papers coming from the IUC with UoN

Open Learning

Muchiri, Patricia, 2007, Analysis of support needs of distance learners: the case of the University of Nairobi. Paper for the First COSC-OPLN Conference, 2007

Muchiri, Patricia, 2009, Addressing learner support needs of distance learners: the case of the University of Nairobi. Paper for the VLIR-IUC-UoN International Conference February

Oboko, Robert, Peter Wagacha, Arno Libotton, Elijah Omwenga ADAPTIVE DELIVERY OF AN OBJECT ORIENTED COURSE IN A WEB-BASED LEARNING ENVIRONMENT, 2008, Proceedings of the 3rd Int. Conference on ICT for Development, Education and Training May 28 – 30, 2008 , Accra, Ghana

Oboko, Robert, Peter Wagacha, Arno Libotton, Elijah Omwenga, 2007, Design of an adaptive software to support problem solving processes, Robert Oboko, Peter Wagacha,. Proceedings of the First International Computer Science and ICT Conference (COSCIT 2007), 5th- 7th February, School of Computing and Informatics, University of Nairobi

Oboko, Robert, Peter Wagacha, Arno Libotton, Elijah Omwenga, 2007, VALUE DIFFERENCE METRIC FOR STUDENT KNOWLEDGE LEVEL INITIALIZATION IN A LEARNER MODEL-BASED ADAPTIVE E-LEARNING SYSTEM. Proceedings of The 3rd Annual International Conference On Computing And Ict Research - SREC07, August 5-8, 2007, Makerere University, Kampala, Uganda (paper has been accepted by the International Journal of Computing and ICT Research)

Oboko, Robert, Peter Wagacha, Arno Libotton, Elijah Omwenga, 2009, USING ADAPTIVE LINK HIDING TO PROVIDE LEARNERS WITH ADDITIONAL LEARNING MATERIALS IN A WEB-BASED SYSTEM FOR TEACHING OBJECT ORIENTED PROGRAMMING. VLIR Conference 2nd to 5th February 2009, Naivasha, Kenya

Oboko, Robert, Peter Wagacha, Arno Libotton, Elijah Omwenga. NON-OBTRUSIVE DETERMINATION OF LEARNING STYLES IN ADAPTIVE WEB-BASED LEARNING. 2007, Proceedings of the Moi University Third Annual International Conference, 31st July- 4th August, 2007, Moi University, Eldoret. (Paper Accepted for Publication in December, 2008 edition of the East African Journal of Information Sciences (EAJIS))

Omwenga, Elijah I., Timothy M. Waema, Peter W. Wagacha, 2004, A model for introducing and implementing E-learning for delivery of educational content within the African context, African Network of Scientific and Technological Institutions (ANSTI/UNESCO) Volume 5 No1, June 2004, Pg 34 - 46



Omwenga, E., Waema, T., & Eisendrath, G., Libotton A. (June 2005b). Development and Application of an Objectives-driven E-content Structuring and Deployment Model (ODC-SDM). In: Kommers P, Richards G. (eds.), World Conference on Educational Multimedia, Hypermedia and Telecommunications. ED-MEDIA 2005, Association for the Advancement of Computing in Education, Montreal, Canada, pp 573-578

Omwenga, E.I., Waema, T.M., & Eisendrath, G.P.C., Libotton A. (2005). Development and Application of an Objectives-Driven Econtent Structuring and Deployment Model (ODC-SDM), African Journal of Science and Technology (AJST), Science and Engineering Series 6(1), pp 45-50.

Libotton A., Omwenga E. I., Eisendrath G.P.C. (2006). ICT use in higher education: the case of e-learning in teacher education at the University of Nairobi. Proceedings of the 31st annual ATEE Conference, October 21-25, 2006, Ljubljana - Portoro - Slovenia.

Waema T.M., Omwenga E.I., and Libotton A. E-learning Content Development Training: A Case Study of E-learning Innovation Adoption at the University of Nairobi. Proceedings of the 1st International Conference on "Virtualization in Higher Education." organised by UCLV as part of the 5th International Congress on Higher Education: "Universalization of the University for a Better World" in Havana (Cuba) from 14th till 16th February 2006.

Omwenga E. I., Libotton A., Nzuki P. Development and application of an Expert System for an effective customer care support system for Distance Learners at the University of Nairobi. Proceedings of the 1st International Conference on "Virtualization in Higher Education." organised by UCLV as part of the 5th International Congress on Higher Education: "Universalization of the University for a Better World" in Havana (Cuba) from 14th till 16th February 2006.

COSC

Ayienga, Eric, Elisha Opiyo, Bernard Manderick, Okello-Odongo, Ann Nowe (2006). Multiagent Systems for Bandwidth Optimization in Wireless Grids, in Second annual international conference on sustainable capacity in developing countries - SRECo6, AUGUST 6- 9, 2006, MAKERERE UNIVERSITY, KAMPALA, UGANDA.

Ayienga, Eric, Elisha Opiyo, Bernard Manderick, Okello-Odongo, Katherine Getao, Ann Nowé (2004). Using Multi-Agent Systems for Efficient Network Resource Allocation with Quality of Service Guarantees in Computational GRIDS. International ICT workshop: Application of ICT in enhancing higher learning education, Dar-es-salaam, Tanzania, April 2004.

Chepken, Christopher, 2004, Computer based Medical Diagnostic decision assistant-Presented at International ICT Workshop 2004 on Application of ICT in enhancing Higher learning education 28th – 30th April 2004 Dar es salaam, Tanzania

Chepken, Christopher, 2007, Mobile Programming Platform Complexities in Developing of Smart application – 1st International Computer Science and ICT conference 5th – 7th February 2007 Nairobi, Kenya



Chepken, Christopher, 2008, Mobile Blogging – Broadband Communications, Information Technology & Biomedical Applications (BroadCom’ 08) 23rd – 26th November 2008, Pretoria RSA

Chepken, Christopher, Complexity Reduction In The Formative evaluation Process Using The Quiz integrator – International Conference On Sustainable Ict Capacity In Developing Countries, Makerere University, Uganda

De Pauw, G., P.W. Wagacha, and G.-M. de Schryver, 2008, Bootstrapping machine translation for the language pair English – Kiswahili. In Strengthening the Role of ICT in Development, 30-37. Kampala, Uganda: Fountain Publishers.

De Pauw, Guy and Peter W. Wagacha, 2007, Sawa Corpus: a parallel corpus English – Kiswahili, to Appear in Proceedings of the 10th International Pragmatics Conference (International Pragmatics Association), 8th – 13th July 2007 Gotenborg, Sweden.

De Pauw, Guy Peter W. Wagacha and Dorothy Atieno Abade, 2007, Unsupervised Induction of Dholuo Word Classes using Maximum Entropy Learning, Proceedings of the 1st International Conference in Computer Science and ICT (COSCIT 2007), 5th – 7th February, Nairobi

De Pauw, Guy, and Peter W. Wagacha, 2007, Bootstrapping Morphological Analysis of Gikuyu, Using Unsupervised Maximum Entropy Learning. To Appear in Proceedings of the INTERSPEECH 2007 conference, 27th – 30th August 2007, Antwerp, Belgium.

De Pauw, Guy, Gilles-Maurice de Schryver, Peter W. Wagacha, 2006, Data-Driven Part-of-Speech Tagging of Kiswahili, Guy De Pauw,, Proceedings of the Ninth International Conference on TEXT, SPEECH and DIALOGUE (TSD 2006) May

De Pauw, Guy, Gilles-Maurice de Schryver and Peter W. Wagacha, 2006, Data-Driven Part-of-Speech Tagging of Kiswahili. Book Series: Lecture Notes in Computer Science, Book: Text, Speech and Dialogue, Springer Berlin / Heidelberg, Volume: 4188/2006, ISBN 978-3-540-39090-9 (September)

De Pauw, Guy, Peter W. Wagacha and Gilles-Maurice de Schryver, 2007, Automatic Diacritic Restoration for Resource-Scarce Languages, Book Series: Lecture Notes in Computer Science, Book: Text, Speech and Dialogue, Springer Berlin / Heidelberg, Volume: 4629/2007, Pg 170-179, ISBN 978-3-540-74627-0 (August)

De Pauw, Guy, Peter W. Wagacha and Gilles-Maurice de Schryver, 2007, Automatic Diacritic Restoration for Resource-Scarce Languages, To Appear in Proceedings of TEXT, SPEECH and DIALOGUE Conference, 2007, 3rd – 7th September 2007, Plzen, Czech

Dharani N. , Kinyamario J. I., Wagacha P. W., Rodrigues A. J., 2008, Browsing impact of large herbivores on *Acacia xanthophloea* Benth in Lake Nakuru National Park, Kenya, , Africa Journal of Ecology



Getao, Katherine, Bernard Manderick, Peter W. Magacha, 2006, Capacity building for information and communication technology higher education programmes in Africa: the case of the School of Computing and Informatics, University of Nairobi. Proceedings of the ICT and Education conference, Santa Clara, Cuba, February

Getao, Katherine, Opiyo E. T. O. (2007). A Grid Service Matrix Model for Resource Scheduling in Grid Computing Environments. In 1st International Conference in Computer Science and Informatics, 5th – 7th February 2007, Nairobi, Kenya, School of Computing & Informatics, University of Nairobi, Kenya.

Mbogo, Tarcisco, K., Elijah I. Omwenga, Peter W. Wagacha, 2006, Framework for Distributed Learning Objects Repository in Developing Economies, Proceedings of the ICT and Education conference, Santa Clara, Cuba February 2006

Musyoka G. M., Elisha Opiyo (2000). The Role of Computers in Teaching and Research in Mathematics. In Career Improvement Workshop in Mathematics and Computer Science, 27th February – 4th March 2000, Chiromo Campus, University of Nairobi.

Ngugi, Kamanda, Peter W. Wagacha, W. Okello-Odongo, 2005, Swahili Text-to-Speech System, Kamanda Ngugi, African Journal of Science and Technology (AJST) African Network of Scientific and Technological Institutions (ANSTI/UNESCO) Volume 6 No. 1, July 2005, Pg 80 – 89

Okioga and Peter W. Wagacha, 2007, Automatic Route Selection: Short Term Traffic Decision Support for Urban Cities, Proceedings of the 1st International Conference in Computer Science and ICT (COSCIT 2007), 5th – 7th February, Nairobi

Opiyo Elisha T. O., and Erick Ayienga, Katherine Getao, Bernard Manderick, Okello- Odongo, Ann Nowé (2008). Game Theoretic Multi-Agent Systems Scheduler for Parallel Machines with Fixed Parameters, in the Proceedings of The Fourth International 4th Annual International Conference on Computing and Research-SRECo8, Makerere University, Uganda, 3-6 August, 2008.

Opiyo Elisha T. O., Erick Ayienga and Katherine Getao, Bernard Manderick, and Okello-Odongo and Ann Nowé (2007). Modeling a Multi-Agent Systems Scheduler for Grid Computing Using the Gaia Methodology, in the Proceedings of the first International Conference in Computer Science and Informatics, School of Computing and Informatics, University of Nairobi, Kenya, 5-9 February, 2007.

Opiyo Elisha T. O., Erick Ayienga, Katherine Getao, Bernard Manderick, Okello-Odongo, Ann Nowé (2005). Computing research challenges and opportunities with grid computers. 1st Annual International Conference and Workshop on Sustainable ICT Capacity in Developing Countries, August 9-12, 2005, Makerere University Kampala, Uganda.

Opiyo Elisha T. O., Erick Ayienga, Katherine Getao, Bernard Manderick, Okello-Odongo, Ann Nowé (2008). Dynamic Resource Allocation: A comparison of First Price Sealed Bid and Vickrey Auction Mechanisms in non pre-emptive, no failure situations,



in the Proceedings of The Fourth International 4th Annual International Conference on Computing and Research- SRECo8}, Makerere University, Uganda, 3-6 August, 2008.

Opiyo Elisha T. O., Erick Ayienga, Katherine Getao, Bernard Manderick, Okello-Odongo, Ann Nowé (2008). Searching for Optimal Schedule for Parallel Machines Using an Agent-based Technique. In Proceedings of the 4th International Operations Research Society of East Africa (ORSEA) Conference, 23rd-24th Oct 2008, Nairobi, Kenya.

Opiyo Elisha T. O., Erick Ayienga, Katherine Getao, Bernard Manderick, William Okello-Odongo, Ann Nowé. (2006). Multi-agent systems scheduler and open grid computing standards, in Second annual international conference on sustainable capacity in developing countries - SRECo6, AUGUST 6-9, 2006, MAKERERE UNIVERSITY, KAMPALA, UGANDA.

Opiyo, Elisha T. O. , Erick Ayienga, Katherine Getao, Bernard Manderick, Okello-Odongo, Ann Nowé (2004). Issues in grid computing in the context of education. International ICT workshop: Application of ICT in enhancing higher learning education, Dar-es-salaam, Tanzania, April 2004.

Opiyo, Elisha T. O. , Katherine Getao, Bernard Manderick, Ann Nowé(2005). Multi-Agent Systems scheduler in a dynamic environment. PhD Colloquium in 1st Annual International Conference and Workshop on Sustainable ICT Capacity in Developing Countries, August 9-12, 2005, Makerere University Kampala, Uganda.

Ruhiu, Samuel, Donor support ICT for Poverty Alleviation Reduction Initiatives; which way forward, School of Computing and Informatics

Wagacha, Peter W. and Dennis Chege, 2006, Adaptive and Optimisation Predictive Text Entry for Short Message Service (Sms). Special topics in Computing and ICT research: Advances in Systems Modelling and ICT Applications. Editors Joseph Kizza, Janet Aisbett, Andrew Vince, Tom Wanyama, Volume II, Fountain publishers, Kampala, ISBN 13: 978-9970-02-604-3. Pg 65 -76

Wagacha, Peter W., Bernard Manderick, Maina E. Muur, 2005, On Support Vector and Relevance Vector Machines. BNAIC 2005 Proceedings of the Seventeenth Belgium-Netherlands Conference on Artificial Intelligence October 17-18, 2005. K.Verbeeck, K. Tuyls, A. Nowe, B. Manderick, B. Kuijpers (Eds). Pg 297-304

Wagacha, Peter W., Guy De Pauw and Katherine Getao, 2006, Development of a Corpus for Gikuyu using machine learning techniques, Proceedings of the Networking the development of language resources for African Workshop, at the 5th Language Resources and Evaluation Conference (LREC) Pg 27-30. 22nd May 2006, Genoa, Italy

Wagacha, Peter W., Guy De Pauw and Pauline W. Githinji, 2006, A Grapheme-Based Approach for Accent Restoration in Gikuyu. Proceedings of the 5th Language Resources and Evaluation Conference LREC Conference (Pg. Session P17-E) 23-26th May 2006, Genoa, Italy



Wagacha, Peter W., Katherine Getao and Bernard Manderick, 2006, Strengthening Research and Capacity Building in Computer Science: Case of the School of Computing and Informatics, University of Nairobi. Special topics in computing and ICT research: Measuring Computing Research Excellence and Vitality. Editors Ddembe Williams & Venansius Baryamureeba, Volume I, Fountain publishers, Kampala, ISBN 13: 978-9970-02-592-3. Pg 44 -55

Wagacha, Peter W., Katherine Getao, Bernard Manderick, 2005, Strengthening Research and Capacity Building in Computer Science: Case of School of Computing & Informatics, University of Nairobi. International Workshop on research, Makerere University, Kampala August

Wagacha, Peter, Bernard Manderick, Katherine Getao, 2004, Benchmarking Support Vector Machines using StatLog Methodology- Annual Machine Learning Conference of Belgium and the Netherlands (Benelearn 2004). Page 185-190.

Wagachag, Peter and Dennis Chege, Sigmoid weighted adaptive predictive text entry for short message service (SMS), 2006, Proceedings of the 2nd Annual International Conference and Workshop on Sustainable Research Excellence in Computing (SREC '06), Makerere University, Kampala, Uganda 6th - 9th August

Xu, Shiyi, Peter Wagacha, Percy G. Dias and Bole Shi, Testability Prediction for Sequential Circuits Using Neural Network, 1997, Proceedings of the 6th Asian Test Symposium (ATS '97) Page 48-55

Reproductive health/HIV

De Vuyst H, Gichangi P, Estambale B, Njuguna E, Franceschi S, Temmerman M. Human papillomavirus types in women with invasive cervical carcinoma by HIV status in Kenya. *Int J Cancer*. 2008 Jan 1;122(1):244-6.

Gichangi P, Bwayo J, Estambale B, Rogo K, Njuguna E, Ojwang S, Temmerman M. HIV impact on acute morbidity and pelvic tumor control following radiotherapy for cervical cancer. *Gynecol Oncol*. 2006 Feb;100(2):405-11. Epub 2005 Nov 4.

Gichangi P, De Vuyst H, Estambale B, Rogo K, Bwayo J, Temmerman M. HIV and cervical cancer in Kenya. *Int J Gynaecol Obstet*. 2002 Jan;76(1):55-63.

Gichangi P, Estambale B, Bwayo J, Rogo K, Ojwang S, Njuguna E, Temmerman M. Acceptability of human immunodeficiency virus testing in patients with invasive cervical cancer in Kenya. *Int J Gynecol Cancer*. 2006 Mar-Apr;16(2):681-5.

Gichangi P, Estambale B, Bwayo J, Rogo K, Ojwang S, Opiyo A, Temmerman M. Knowledge and practice about cervical cancer and Pap smear testing among patients at Kenyatta National Hospital, Nairobi, Kenya. *Int J Gynecol Cancer*. 2003 Nov-Dec;13(6):827-33.

Gichangi PB, Bwayo J, Estambale B, De Vuyst H, Ojwang S, Rogo K, Abwao H, Temmerman M. Impact of HIV infection on invasive cervical cancer in Kenyan women. *AIDS*. 2003 Sep 5;17(13):1963-8.



Nyagol J, Leucci E, Onnis A, De Falco G, Tigli C, Sanseverino F, Torricelli M, Palumbo N, Pacenti L, Santopietro R, Spina D, Gichangi P, Muchiri L, Lazzi S, Petraglia F, Leoncini L, Giordano A. The effects of HIV-1 Tat protein on cell cycle during cervical carcinogenesis. *Cancer Biol Ther.* 2006 Jun;5(6):684-90. Epub 2006 Jun 18.

AQUA project

De Waen D, Nyunja J, Vanreusel A, & Bouillon S (2007). Community structure and trophic relations in an east African coupled mangrove-seagrass ecosystem. VLIZ Young Scientist Day, Brugge (Belgium), March 2007.

De Troch M., Raes M., Muthumni A., Gheerardyn H., Vanreusel A., 2008. Spatial diversity of nematode and copepod genera of the coral degradation zone along the kenyan coast, including a test for the use of higher-taxon surrogacy. *African Journal of Marine Science* 30: 25-33.

Fonseca, G; Muthumbi, AW; Vanreusel, A (2007) Species richness of the genus *Molgolaimus* (Nematoda) from local to ocean scale along continental slopes MARINE ECOLOGY-AN EVOLUTIONARY PERSPECTIVE, 28 (4): 446-459

Kimani E N & K. M. Mavuti. 2002. Abundance and Population Structure of the Blacklip Pearl Oyster, *Pinctada margaritifera* L. 1758 (Bivalvia: Pteriidae), in *Coastal Kenya Volume 1, Issue 2*, 169-179

Kimani E.N, K.M. Mavuti and T. Mukiama. 2006. The reproductive activity of the pearl oyster *Pinctada imbricata* Röding 1798 (Pteriidae) in Gazi Bay, Kenya. *Tropical Zoology* 19: 159-174

Kimani, E.N. and K.M. Mavuti. Abundance and Population Structure of the Blacklip Pearl Oyster, *Pinctada margaritifera* L. 1758 (Bivalvia: Pteriidae), in *Coastal Kenya*.

Kitheka J U, R. G. Angwenyi and K.M. Mavuti. 2002 Dynamics of Suspended Sediment Exchange and Transport in a Degraded Mangrove Creek in Kenya. *Ambio*, Vol. 31, No. 7-8, pp. 580-587, 2002.

Kitheka, J.U. G.S. Ongwenyi and K.M. Mavuti, 2003. Fluxes and exchange of suspended sediment in tidal inlets draining a degraded mangrove forest in Kenya Estuarine, *Coastal and Shelf Science* Vol. 56, pp. 655-667

Kitheka, J.U., G. Angwenyi and K.M. Mavuti. 2002 Dynamics of Suspended Sediment Exchange and Transport in a Degraded Mangrove Creek in Kenya. *Ambio*, Vol. 31, No. 7-8, pp. 580-587, 2002.

Kivengea, G.M., (*Procambarus clarkii*) (Crustacea: Cambaridae) and native Dytiscid beetles (*Cybister tripunctatus*) (Coleoptera: Dytiscidae), in Kenya (pp. 157 - 162) : *African Journal of Aquatic Science* 2005, 30(2): 157-162.

Kones, J., Soetaert, K., Van Oevelen, D., Owino, J.O., Mavuti, K. 2006. Gaining



insight into aquatic food webs reconstructed by the inverse method: A factor analysis approach, *Journal of Marine Systems* 60 (2006) 153– 166

Kones, J, Soetaert, K., van Oevelen, D. and J. Owino, 2009. Are network indices robust estimators of food web functioning ? a monte carlo approach. *Ecol. Modelling.* 220:370–382.

Kulmiye A. J. and K. M. Mavuti, 2003, Growth and moulting of captive *Panulirus homarus homarus* in Kenya, western Indian Ocean, Lobster Biology Conference, Hobart, Tasmania

Kulmiye A. J. and K. M. Mavuti. 2005. Growth and moulting of captive *Panulirus homarus homarus* in Kenya, western Indian Ocean. *New Zealand Journal of Marine and Freshwater Research*, Vol. 39: 539–549

Kulmiye A.J., K.M. Mavuti and J.C. Groeneveld Size at onset of maturity of spiny lobsters *Panulirus homarus homarus* at Mambrui, Kenya, Lobster Biology Conference, Hobart ,Tasmania

Kulmiye AJ, KM Mavuti and JC Groeneveld. 2006. Size at onset of maturity of spiny lobsters *Panulirus homarus homarus* at Mambrui, Kenya. *African Journal of Marine Science*. 2006, 28(1): 51–55.

Kulmiye, A.J., M.J. Ntiba and S.M. Kisia. Some Aspects of the Reproductive Biology of the Thumbprint Emperor, *Lethirinus harak* (Forsskål, 1775), in Kenyan Coastal Waters.

Mavuti K M , E N Kimani and T. Mukiama, 2004, Growth patterns of the pearl oyster *Pentad margaritifera* L. in Gazi Bay, Kenya, Indian Ocean Marine Science conference, Perth, Australia

Mavuti K. M. and C. Mvoya and J. Kazungu, 2007, Nutrient loading and its impact on phytoplankton dynamics and status of eutrophication in three tidal marine creeks port reitz, mtwapa creek and funzi bay, Kenya. 5th International Conference on the West Indian Ocean Marine Science in Durban, South Africa, from the 21st to the 27th October, 2007

Mavuti K.M., A. J. Kulmiye and M. J. Ntiba, 2004, Species composition, distribution, abundance and population structure of panulirid lobsters along the Kenyan coast, Indian Ocean Marine Science conference, Perth, Australia

Mavuti, K M, J A. Nyunja and E O. Wakwabi. 2004: Trophic Ecology of Some Common Juvenile Fish Species in Mtwapa Creek, Kenya. *Western Indian Ocean J. Mar. Sci.* Vol. 3, No. 2, pp. 179–187,

Mavuti, K.M, Mutua, M. J. Ntiba, A. Muthumbi, D. Ngondi and A. Vanreusel, 2008, Evidence of slow restoration of mangrove associated benthic macro-endofauna after reforestation of *Rhizophora mucronata* Forest Swamp in Gazi bay, Kenya, SWS Conference, Portland, Oregon, USA, September 2008



Mavuti, K.M., C. Anyango, M. Osore. 2001. The Zooplankton community of Shirazi Bay (Kenya).

Mavuti, K.M., J. U. Kithika and J. M. Angwenyi, 2003, Water Exchange and Sediment Dynamics at a Mangrove Wetland: Mwache Creek Estuary, Port-Reitz Ria, Kenya, 3rd International Limnogeology Congress: Arizona USA, 29 March – 2 April 2003

Mavuti, K.M., J.U. Kithika & J.M. Angwenyi. 2003. Water Exchange and Sediment Dynamics at a Mangrove Wetland: Mwache Creek Estuary, Port-Reitz Ria, Kenya. Arizona Congress, USA

Muohi A.W, Onyari J.M, Omondi J.G, Mavuti K.M., 2003, Occurrence of Heavy Metal Pollutants in Sediments in Mtwapa, Port Reitz and Shirazi Marine Tidal Creeks along the Kenyan Coast. Bulletin of Environmental Contamination and Toxicology 70:1220-1227 (2003).

Muohi, A W J. M. Onyari, J. G. Omondi, K. M. Mavuti. 2003. Heavy Metal Distribution in Surface Sediments from Mtwapa and Shirazi Creeks, Kenyan Coast. Bull. Environ. Contam. Toxicol. 70:1220-1227 (2003).

Muohi, A.W. J.M. Onyari, J.G. Omondi, K.M. Mavuti 2003. Occurrence of Heavy Metal Pollutants in sediments from Makupa and Port-Reitz Creek systems, Kenyan Coast. Environ. Internat. Vol: 28 (2003) 639-647.

Muohi, A.W., J.M. Onyari, J.G. Omondi, K.M. Mavuti, 2003. Heavy metals in sediments from Makupa and Port-Reitz Creek systems: Kenyan Coast. Environment International 28 (2003) 639-647.

Mutua, A K, K. M. Mavuti, N. Daro & M. Tackx 2003 Spatial Distribution of Suspended Particulate Matter in Mtwapa Creek and Funzi Bay, Kenya. Western Indian Ocean J. Mar. Sci. Volume 2, Issue 2, 16-26

Muthumbi, A., Vanreusel, A., G. Duineveld, K. Soetaert and M. Vincx (2004) Nematode community structure along the continental slope off the Kenyan coast, Western Indian Ocean. Int Review Hydrobiology 89: 188-205

Muthumbi, A. & A. Vanreusel, (2006). Chapter 19. Order Araeolaimida. In: Eyuaalem, A., W. Traunspurger & I. Andrassy (Eds.), Freshwater nematodes: ecology and taxonomy. CAB International Publishing, Cambridge, USA: 604-610

Nyunja, J.A., K. M. Mavuti and E.O. Wakwabi. 2002. Trophic Ecology of *Sardinella gibbosa* (Pisces: Clupeidae) and *Atherinomorous lacunosus* (Pisces: Atherinidae) in Mtwapa Creek and Wasini Channel, Kenya. Western Indian Ocean J. Mar. Sci. Vol. 1, No. 2, pp. 181-189, 2002

Nyunja J, Ntiba M, Onyari J, Mavuti K, Soetaert K, & Bouillon S (2009) Autotrophic carbon sources for fish communities in a tropical coastal ecosystem (Gazi bay, Kenya). Estuarine, Coastal and Shelf Science, in press.



Nyunja J, Bouillon S, Onyari J, Ntiba M, Mavuti K, & Vanreusel A (2006) Carbon sources for nekton in a tropical mangrove-fringed estuary, Gazi Bay, Kenya. 2nd Meeting on Mangrove Macrobenthos, held in Queensland, Australia, June 2006.

Nyunja J, Ntiba M, Mavuti K, Onyari J, & Bouillon S (2008) Carbon sources supporting a diverse fish community in a tropical coastal ecosystem (Gazi bay, Kenya). Society of Wetland Scientists Conference, Washington, May 2008.

Pape E., Muthumbi A., Kamanu P. C. and Vanreusel A. (2008) Size-dependent distribution and feeding habits of *Terebralia palustris* in mangrove habitats of Gazi Bay, Kenya. *Estuarine, Coastal and Shelf Science*, 76: 797-808

Raes M, De Troch M, Ndaro SGM, Muthumbi A, Guilini K, Vanreusel A (2007) The structuring role of microhabitat type in coral degradation zones: a case study with marine nematodes from Kenya and Zanzibar. *Coral Reefs* 26 (1): 113-126

Soetaert, K. and Julius K Kones (2008). NetIndices: a package of network indices. R package version 1.0. <http://cran.r-project.org/web/packages/NetIndices>

Wang'ondur, V.W., J.G. Kairo, J.I. Kinyamario, F.B. Mwaura, J.O. Bosire, F. Dahdouh-Guebas & N. Koedam, 2006. Vegetative phenology of *Rhizophora mucronata* Lamk., *Avicennia marina* (Forsk.) Vierh. and *Sonneratia alba* Sm. in natural and reforested stands at Gazi Bay, Kenya. Mangrove Macrobenthos Meeting, 25-30 June, Coolangatta, Australia.

Wang'ondur, V.W., J.G. Kairo, J.I. Kinyamario, F.B. Mwaura, J.O. Bosire, F. Dahdouh-Guebas & N. Koedam, 2007. Vegetative phenology of *Rhizophora mucronata* Lamk., *Avicennia marina* (Forsk.) Vierh. and *Sonneratia alba* Sm. in natural and reforested stands at Gazi Bay, Kenya. Symposium on Advances in Tropical Aquatic Science Research and Management in Kenya, 9-13 February, Mombasa, Kenya.

ICT

Getao, K.W. and Agnes N. Wausi, 2006, Cultural dynamics and communication technology adaptation in developing country, UK Development studies Association conference, Open University, Milton Keynes, 7-9 September 2006

Getao, K.W. and Agnes N. Wausi, 2008, The organisational cultural dynamics and international communication technology adaptation in a developing country: the case of the Kenyan Joint University Admission System, in: *Information Technology for Development Journal*

Wausi, Agnes N., 2006, Developing Intranet for linkage to the Internet, VLIR-IUC-UoN International Conference, 2002

Wausi, Agnes N., 2009, Organisational learning in the IS implementation process, VLIR-IUC-UON International Conference, 2-4 February 2009







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VLIR {Vlaamse Interuniversitaire Raad}
UOS {Universitaire Ontwikkelingssamenwerking}
Bolwerksquare 1a ~ 1050 Brussels ~ Belgium
T (32) (2) 289 05 50 **F** (32) (2) 514 72 77
www.vliruos.be
info@vliruos.be