

NUFU Final Report 2002-2006

THE NORWEGIAN PROGRAMME FOR DEVELOPMENT, RESEARCH AND EDUCATION



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Executive Summary

The NUFU Programme – the Norwegian Programme for Development, Research and Education – supports long-term academic cooperation between institutions of research and higher education in the South and corresponding institutions in Norway. The programme rests on a partnership model based on the notion of equality, mutual benefit for all partners, as well as institutional commitment and ownership. In the third NUFU programme period (2002-2006), 30 institutions were involved as main partners in the South and 12 in Norway. The portfolio consisted of 71 five-year projects; 55 in Africa, 9 in Asia, 2 in Latin America, and 5 in the Palestinian areas.

The main goal of the NUFU Programme is to contribute to increased capacity and competence in research and research-based education in universities in the South. Some of the tools are to create research opportunities, educate new researchers and to involve staff members in international networks, and thereby to promote staff retention. Education of Master's and PhD students is at the core of every NUFU-supported project, and at least five hundred students at institutions in sub-Saharan Africa, Asia, Latin America and the Palestinian areas were educated within the framework of the NUFU Programme 2002-2006.

PhD students are often trained in sandwich models that combine study both at home and in Norway. While receiving international research experience from the NUFU collaboration the students maintain their ties to their home institutions as staff members. The fact that at least 60 per cent of NUFU-funded PhD students hold positions at universities in the South after the completion of their degree indicates that measures taken in the NUFU Programme to support student and staff retention are successful.

The NUFU Programme aims at achieving gender balance among students and researchers involved in the projects. However, the source group for recruitment of female PhD students and academic staff is often very sparse. While 45 per cent of the Master's students were female, the overall proportion of women among PhD students and researchers from the South was only 24 per cent. Nevertheless the overall share of female researchers from the

South in the NUFU-supported projects was higher than the share of female academic staff in general, even in the best-performing countries in Africa.

NUFU-funded projects have been successful with regard to scientific output, and the number of publications and dissemination activities was higher than expected at the outset of the programme period 2002-2006. More than 250 articles have been published in refereed international journals, which indicates research of high quality.

In the NUFU context it is necessary to apply a broad concept of quality that includes relevance in regard to poverty reduction and national development in the South. While publications in international peer-reviewed journals are benchmarks of scientific quality, publication and dissemination of research results at national and regional level may be of greater importance in terms of impact, as it reaches a wider community. While it is difficult to assess the impact of each research project on national development, NUFU-funded projects report that knowledge produced by the projects has led to change in policies and practices at different levels and has in several cases had a direct impact on people's lives in local communities. Most importantly, the strengthening of institutions of higher education and research through capacity building is of fundamental importance to national development and sustainable poverty reduction efforts.



1. Introduction

This report by the Norwegian Centre for International Cooperation in Higher Education (SIU) presents results from the third programme period 2002-2006 of the NUFU Programme. In addition to presenting and analysing some of the results produced and experiences gained, the final report discusses some important strategic issues in South-South-North cooperation within higher education and research.

The third programme period was based on an agreement made in 2001 between Norad and the Norwegian Association of Higher Education Institutions (UHR). A strategy for the period was developed by the NUFU Programme Board in 2001.

Hundreds of researchers, administrators, and PhD and Master's students from over 40 institutions in Africa, Asia, Latin America, the Palestinian areas and Norway were involved in the implementation of the NUFU Programme 2002-2006, in addition to Programme Board members, Norad, UHR, SIU and others. It is obvious that a brief final report will not be able to cover all aspects, results and effects from the extensive activities that were carried out within the third NUFU programme period.

The report starts with a short presentation of facts about the NUFU Programme in general, and the third programme period in particular. Chapter Three focuses on perspectives and experiences of the mode of cooperation applied in the NUFU Programme. The subsequent four chapters present and discuss results related to the following areas: capacity building, gender issues, scientific output and quality, and national development and poverty reduction.

Experience from 2002-2006 formed an important basis for the development of the fourth NUFU programme period 2007-2011, and it will, together with the experience gained in the current programme period, be of importance when we start to look beyond 2011.

2. The NUFU Programme 2002-2006

2.1 Programme description

The NUFU Programme – the Norwegian Programme for Development, Research and Education – is a partnership programme for academic cooperation based on initiatives from researchers and institutions in the South and corresponding institutions in Norway. The programme is directed towards building sustainable capacity and competence in research and research-based education in universities in the South. The NUFU Programme is funded by the Norwegian government through the Norwegian Agency for Development Cooperation (Norad), and the overall administration of the programme is the responsibility of the Norwegian Centre for International Cooperation in Higher Education (SIU).

NUFU supports long-term cooperative projects including joint research, training of Master's and PhD students, the development of Master's and PhD programmes in the South, and the training of technical and administrative staff, as well as publication and dissemination of research results. The projects should match institutional strategies and priorities in the partner institutions and be relevant to national strategies for development and poverty reduction in countries in the South.

2.2 Brief history of the NUFU Programme

NUFU was established on the initiative of Norwegian universities as a standing committee for development research and education. The first five-year NUFU agreement was signed between the Ministry of Foreign Affairs and the Norwegian Council of Universities in 1991 and had a total budget of 175 million NOK. A second five-year agreement (1996-2000) was signed by the parties in 1995, with a budget of 230 million NOK.

In 1999, the Ministry of Foreign Affairs transferred the responsibility for the NUFU agreement to the Norwegian Agency for Development Cooperation (Norad). The responsibility for the NUFU agreement rested now with Norad and the Norwegian Association of Higher Education Institutions (UHR) while the implementation of the programme was carried out by the NUFU Programme Board, with the Centre for International University Cooperation (SIU) as its secretariat.

Due to delays in the signing of an agreement between Norad and UHR for the NUFU Programme's third five-year period, 2001 became an interim year between the second and the third phases of NUFU cooperation. The agreement for the third NUFU programme period was signed by Norad and UHR in January 2001 (and revised in December 2003), with a budget of 60 million NOK per year. The agreement was initially signed for the period 2001-2005 but was



“The general objectives of the agreement are to contribute towards building up expertise in developing countries through cooperation in the fields of research and education between universities, university colleges and research institutions in Norway and similar institutions in the South, primarily in sub-Saharan Africa and in Norway's partner countries in Asia, Central America and the Middle East.”

- The NUFU agreement for the third programme period

“Developing human resources for the benefit of the communities, nations and regions of the South through long-term competence enhancement is the very core of the NUFU Programme.”

- Strategic Plan for the NUFU Programme 2001-2005

later extended to 2006. 35 million NOK of the funding for 2001 was provided to ongoing cooperative projects from the second programme period for the interim year.

In addition to the abovementioned agreement separate contracts were signed for the funding of two cooperative projects between Norwegian institutions and institutions in South Africa (6 million NOK) and three projects with institutions in the Palestinian areas (8.5 million NOK). An additional agreement was signed in October 2003 between the Royal Norwegian Embassy in Malawi and UHR for funding of three collaborative projects between the University of Malawi and Norwegian partner institutions. The budget for this agreement was 15 million NOK.

The NUFU Programme Board allocated funds to 50 cooperative projects in 2001, with the projects starting up in 2002, and funds to another 18 projects in 2002, with most of these projects commencing in 2003, including the projects funded by the separate agreements for South Africa and the Palestinian areas. A total of 221 project proposals were submitted in the two application rounds in 2001 and 2002. In 2003 the NUFU Programme Board allocated funds to the three collaborative projects covered by the separate agreement for Malawi.

The projects that started in 2003 were planned for a five year period with 2007 as the final year of project funding. In addition, several of the projects that started in 2002 were delayed, and needed until 2007 to complete their activities and meet their goals and objectives. By the end of 2007 all projects had terminated their activities.

The total budget for the third NUFU programme period 2002-2006 (including additional agreements) was approximately 365 million NOK, in addition to 35 million NOK provided to ongoing cooperative projects from the second programme period for 2001.

In 2004, the Norwegian Centre for International Cooperation in Higher Education (SIU) was established as a public administrative agency under the Norwegian Ministry of Education and Research, with its own Board of Directors. The new administrative agency was based on the former Centre for International University Cooperation (SIU), and continued as administrative body for the NUFU Programme. In January 2006 a new NUFU agreement was signed between Norad and SIU for the fourth NUFU programme period 2007-2011.

2.3 Project portfolio

The NUFU project portfolio for 2002-2006 consisted of 71 collaborative projects, with 30 institutions involved as main partners in the South and 12 in Norway. 55 of the projects were with institutions in Africa, 9 projects with institutions in Asia, 2 projects with institutions in Latin America, and 5 projects with universities in the Palestinian areas. Four universities in Africa were characterised as principal partners in the South, hosting the largest project portfolios. These were Addis Ababa University in Ethiopia, Makerere University in Uganda, the University of Dar es Salaam in Tanzania and the University of Zimbabwe.

Most NUFU collaborative projects 2002-2006 were bilateral projects with two partners, one in the South and one in Norway. However, more focus was put on network cooperation, and 18 projects were categorised as network projects. Some of these projects included extensive cooperation in research and training between several institutions. Other projects were run by two partner institutions, whereas students were recruited from other institutions and countries as well.

The portfolio covered several disciplines and subject areas. Divided into broad disciplinary categories, the NUFU project portfolio was distributed as follows:

Humanities	9
Social Sciences	18
Mathematics and Natural Sciences	15
Medical Sciences	10
Technology	5
Agricultural and Fisheries Sciences	3
Multidisciplinary Combinations	11
Total	71

Compared to the second NUFU programme period, with a total number of 99 cooperative projects, the portfolio for 2002-2006 consisted of fewer but larger projects. Several of the cooperative projects in the third programme period were big, institutional networks entailing many joint research projects and the training of researchers.

A full list of the projects can be found in Appendix 2.

In addition to the multi-annual projects, budget allocations were made each year for funding of short-term activities related to guest researcher and lecturer visits from the South to Norwegian institutions, institutional contact visits for the establishment of formal institutional cooperative links, and the planning of new multi-annual cooperative projects.

2.4 The NUFU Programme Board

The NUFU Programme Board is the decision-making body for the NUFU cooperation at programme level. The Programme Board is responsible for allocating funds to projects and activities under the NUFU Programme, as well as for monitoring the institutional cooperation and project activities.

The Norwegian Association of Higher Education Institutions (UHR) appointed six representatives from Norwegian institutions of higher education to form the NUFU Programme Board for the period 1 January 2000 - 31 December 2002, and seven members for 1 January 2003 - 31 May 2006. In addition, the National Union of Students in Norway (NSU) appointed one student board member.

Since 1 June 2006 the NUFU Programme Board has consisted of six members from the Norwegian higher education sector, one member appointed by Norad, and one student member appointed by NSU. UHR and Norad are observers to the Programme Board. The NUFU Programme Board for the period 1 June 2006 to 31 May 2009 was appointed by the SIU Board on 27 March 2006.

SIU serves as the secretariat for the NUFU Programme Board and is responsible for the day-to-day running of the NUFU Programme.

2.5 Seminars and conferences

Several seminars and conferences were organised by SIU during the third NUFU programme period, with participation from partner institutions and other stakeholders.

The seminar “Sharing experiences and visions – Planning for a new NUFU phase” was organised in November 2004 and hosted by Makerere University in Uganda. The focus of the seminar was on experiences from cooperation within the NUFU Programme, discussions on quality issues as well as indicators for success of cooperation and projects in the next (fourth) NUFU programme period. The seminar was attended by representatives from partner universities in Africa and Norway, as well as from the Norwegian Ministry of Foreign Affairs, the Norwegian Ministry of Education and Research, the Research Council of Norway, Norad, UHR, SIU and the NUFU Programme Board.

Norad and SIU cooperated in organising a dissemination conference for the third NUFU programme period in June 2007, with the title “The NUFU Programme and its impact on policy, communities and institutions”. The conference was held in Bergen and attracted around 100 participants from 20 different countries.

Seminars for NUFU project coordinators have been organised annually by SIU, with Norwegian universities as hosts.

Representatives from SIU and the NUFU Programme Board visited a large number of partner institutions and cooperation projects in the period 2002 to 2006.

2.6 Reporting in the NUFU Programme

The NUFU Programme has applied a reporting system with annual progress reports prepared jointly by the project coordinators and submitted to SIU online, followed by annual institutional reports presented by each participating institution in the South and in Norway. The NUFU Programme Board presents annual reports for the NUFU Programme to Norad, based on data from project reports and institutional reports. The reporting system in the NUFU Programme changed during the third programme period, with an increased focus on reporting of deviations and on institutional assessment and monitoring of each project.

In the present report the following main data sources have been employed:

- Project coordinators’ annual progress reports for 2002-2007 from each NUFU-supported project in the third programme period (Annual project reports)
- Annual institutional reports from each institution involved in the coordination of NUFU-supported projects (Annual institutional reports)
- Final reports from NUFU-supported projects funded under the NUFU agreement 2002-2006 (Final project reports)

3. The NUFU Concept – Experiences and Perspectives

3.1 The partnership model

The NUFU Programme rests on a partnership model based on the notion of equality, mutual benefit for all partners, as well as institutional commitment and ownership. The model provides the overall framework within which project activities take place.

The partnership model is a decentralised one, in which project initiation, implementation, monitoring and reporting are responsibilities of the partner institutions.

The model is designed with a view to facilitate fulfilment of the programme objectives of building capacity and competence in research and research-based education at partner institutions in developing countries, and to produce knowledge relevant for national development and poverty reduction. These objectives are pursued by supporting long-term cooperation between research and higher education institutions in the South and in Norway. The NUFU Programme emphasises academic cooperation in a long-term perspective. By doing so, it attempts to meet one of the main challenges and special features of research and higher education in general – that obtaining results is a time-consuming task.

Development cooperation may be vulnerable to structural or organisational change, or to a shift of priorities, in particular when it depends on the allocation of additional funding and institutional resources. As an example, a change of leadership at departmental level may be detrimental. The partnership model has been designed so as to safeguard the long-term perspective in academic collaboration crucial to the NUFU concept by anchoring collaboration at the institutional level.

The partnership model as applied in the NUFU Programme represents a different approach to “traditional” development cooperation by emphasising academic collaboration on equal terms. The evaluation of the NUFU Programme¹ in 2000 suggested that the partnership model was highly appreciated by partners in the South in particular, and represented a unique feature in North-South academic collaboration in general. The main reason for this was reported to be that it provided structural access to information, technology, professional networks and publication channels within a framework of long-term and mutually beneficial relationships. Furthermore, the concept was one that to a large extent allowed partner institutions in developing countries to set the agenda according to their own needs and priorities.

Annual institutional reports emphasise that cooperation works well only when partnerships are based on personal commitment from and between researchers, and are sustainable only in the presence of real institutional commitment supported by the necessary administrative and organisational structures. This view is also supported by the few instances of project failure, where institutional commitment has been formal rather than real.

Several partner institutions in the South have reported on favourable effects stemming from the nature of the collaborations. The set-up has facilitated internal collaboration across faculties, units and departments and the motivation of academic staff has increased as a result of project participation. Institutions report that the NUFU cooperation has contributed to promote their international image, further research opportunities have been established and greater emphasis has been placed on research in the institutions’ strategic planning. Furthermore, it seems that institutions hosting several NUFU projects are benefiting the most: The pooling of resources both with regard to project activities and project management has in many instances had a positive effect on institutions in creating fertile academic environments.

There are examples that NUFU-supported activities have stimulated academic and non-academic cooperation in institutional development in general, e.g. in institutional management and administration, library and ICT infrastructure, to mention a few areas.² On the Norwegian side, this kind of extended institutional collaboration may well serve to integrate development cooperation in regular day-to-day operations, anchored at the institutional leadership level.

It also seems that the partnership model has served as a fertile spawning ground for new collaborations. Many projects have applied a process orientation rather than a results orientation with regard to design and mode of operation. It seems clear that such an orientation has resulted in many new projects in the current NUFU portfolio.

Some institutions emphasise that in addition to positive effects with regard to academic development and outputs the partnership model has contributed significantly in terms of cultural knowledge and understanding on the individual level, an effect which should not be underestimated.

3.2 Internationalisation at participating institutions

Fostering academic collaboration across borders is the core element in internationalisation. The exchange of students and staff, exposure to new academic ideas and environments, joint research, etc. are significant features of the NUFU Programme as well as general hallmarks of internationalisation. Therefore, it may be argued that the NUFU Programme potentially fosters increased internationalisation of research and higher education by its very nature.

The evaluation of the NUFU Programme in 2000 suggested that NUFU did have an effect with regard to encouraging Norwegian institutions to internationalise their research and educational programmes, as well as creating increased awareness of issues pertinent for the South. As a response to requirements vested in the Quality Reform in Norwegian higher education from 2001, some Norwegian institutions revised their institutional agreements originating from the NUFU Programme to encompass student exchange, and also to include their own students in the projects.

From a Southern perspective the option of establishing network projects added a regional dimension to the programme. The NUFU Programme serves in some cases as a catalyst for increased cooperation between universities, faculties and departments in different countries, based on common interests and efforts in research and education.

The strengthening of capacity and competence in poor countries is still seen as an important responsibility, partly resting on Norwegian institutions: It is an important objective in Norway's foreign policy to facilitate economic growth, development and increased welfare in poor countries by various cross-sector means. It seems clear that Norwegian institutions have a catalytic function with regard to fulfilling this objective. In addition, development cooperation is an important source of knowledge about key challenges for developing countries and may serve to enhance Norwegian authorities' abilities to mould a knowledge-based policy.³

3.3 Funding issues

When the NUFU Programme was launched in 1991 it was partly coined in idealistic terms: Norwegian institutions of higher education had a moral obligation to support sister institutions in poor countries. At the same time Norwegian authorities decided that there was also a need to enhance knowledge of development processes in poor countries. As a result, the Ministry of Foreign Affairs decided to provide funding for a new programme for competence and capacity building as part of Norwegian development aid.

The NUFU Programme is not a comprehensive funding scheme but rather a way of supporting cooperation in higher education and research within an institutional setting. Programme participation requires a twinning of funds: The NUFU funds support project-related activities such as research, scholarships, and to a limited extent infrastructure, as well as some support to the institutions for project management and administration and coordination. The projects rely on substantial contributions of resources from the

partner institutions in the South as well as in Norway. Based on institutional reports, some Norwegian institutions argue that their own contribution roughly equals the amount of funding allocated through the programme, mostly in the form of manpower, infrastructure and running costs. The contributions from the institutions are core elements in the partnership model. However the model requires that the institutions in their strategic plans give priority to South-South-North cooperation.

The larger part of project allocations is devoted to competence and capacity building purposes at the partner institutions in the South. The programme offers no funding for capacity building or institutional development at Norwegian institutions. At the same time, the programme relies on Norwegian institutions as operators, and it is crucial that programme terms and conditions are acceptable to these institutions.

3.4 Priorities at partner institutions in the South as basis for project selection

It is an important principle in the NUFU Programme that the needs and priorities of the institutions in developing countries take priority over those of Norwegian institutions. The single most important mechanism for safeguarding this principle is found in the project selection mechanism. Institutions applying for funding from the NUFU Programme assess and rank their own project proposals before they are presented to the NUFU Programme Board. The rankings from the applying institutions in the South are given considerably more weight than the rankings from the Norwegian institutions.

The intention behind these measures has been to ensure a fair selection process based on the priorities of the institutions in the South, securing relevance with regard to institutional as well as national priorities and strategies.



4. Building Capacity and Competence in Research and Education

4.1 The need for increased capacity and competence

There is an increased understanding in the international community of the crucial role that institutions of higher education and research can play and should play in the development of a country or a region. Autonomous universities have played important roles in economic development globally, primarily through their research activities and by educating qualified workers for the public and private sectors. Such human capital is also crucial to the sustained economic development in Norway's partner countries in sub-Saharan Africa as well as in other regions. As stated in a 2008 World Bank publication:

“Human capital, effectively harnessed, would enable African economies to increase allocative efficiency and maximize the returns from [...] limited physical capital. Moreover, it is only through knowledge and informed judgment that African countries will be able to cope with profound threats from disease, an expanding youthful and urbanizing population, and climate change.”⁴

The higher education institutions have faced numerous challenges over decades, and over the last ten years a substantial increase in the number of students in higher education institutions has been experienced throughout Africa and also in other regions. Tertiary education budgets have not increased at the same speed. Annual public financing for each African tertiary student in 1980 was USD 6,800, whereas the corresponding amount for 2005 was USD 981. Cost-sharing models have been introduced and many tertiary students are now covering their own education costs fully, in both public and private institutions. The educational quality and relevance in public universities has suffered under these circumstances:

“Inadequate funding for research and insufficient attention to professional development has led to a crisis in academic staffing just when teachers are most needed to instruct the rising number of students. A combination of inadequate salaries, heavy teaching workloads resulting from declining staff-student ratios, deficient personnel management, and lack of research opportunities makes staff retention and recruitment increasingly difficult.”⁵

The main goal of the NUFU Programme is to contribute to increased capacity and competence at partner universities in the South. Some of the tools are to create research opportunities, educate new researchers and to involve staff members in international networks, and thereby to promote staff retention.

Education of Master's and PhD students is at the core of every NUFU-supported project. Students are involved in international research cooperation, and are supervised jointly by professors from cooperating institutions in their home country and in Norway, at PhD level often in sandwich models that combine study both at home and abroad. In network projects joint teaching and supervision may be conducted by several partners in the region, as well as from Norway.

The challenge is, however, not only to provide staff members at institutions in the South with research education, but also to retain staff members once they complete their Master's and PhD education. The regional and international networks may also serve as tools in this regard, and the strong long-term relationships between institutions participating in the NUFU cooperation may contribute positively to the return of educated students and their retention at the home institutions, as discussed later in this chapter.

4.2 Data on the number of Master's and PhD students

In their annual reports the NUFU-supported projects present details of each student at Master's and PhD level involved in the project, including their status – whether enrolled, discontinued or completed. A total of 1023 individual students were reported in the annual reports for 2002-2007. This number includes students at both Master's and PhD level and with different funding sources. Approximately one third were registered at PhD level and the rest at Master's level or on other degree studies.

In regard to funding, 603 individual students were reported as fully funded by NUFU, 230 of whom were at PhD level. Another 100 students from the South were registered as partly funded by NUFU, 67 of whom were PhD students. This means that the total number of individual students reported as fully or partly funded by NUFU was 703 (297 at PhD level). The remaining were students from the South with funding other than from NUFU, or Norwegian students involved in the NUFU-funded projects. A discussion on synergies with other programmes is provided below.

Not all students were reported to have completed their degree by 2007. 53 per cent of students fully or partly funded by NUFU are reported as completed, while 10 per cent have discontinued their studies according to the reports. 37 per cent of the fully or partly funded NUFU students were never reported as completed

or discontinued.⁶ One possible reason is that some of the project coordinators failed to change the status of the students from enrolled to completed or discontinued at the end of the project period.⁷ Another explanation might be that some students did not complete their degrees by 2007 and were still studying at the end of the programme period.

As shown in table 4.1 only 116 PhD students fully or partly funded by NUFU are reported to have completed their degrees. This constitutes 39 per cent of the 297 registered/enrolled PhD students with such funding.⁸

In the final reports from NUFU-funded projects the project coordinators are asked to report the number of PhD students educated with support only or partly from NUFU funds. The total number of reported students is approximately 255. This is significantly higher than the 116 PhD students reported as completed in the annual project reports. Also compared to the total number of enrolled, but not discontinued, PhD students fully or partly funded by NUFU (approximately 270 individual students) this number is very high.

A closer look at the data reveals uncertainties about the quality of the data for the number of educated students. In the final reports the names of the individual students are not listed and there is reason to believe that not all projects have reported the correct number of students. Moreover the projects might have reported students as “educated” in the final report although they had not yet completed their degrees. One may conclude that the correct number of completed PhD degrees at the end of the programme period certainly was higher than 116, but probably lower than 255. If the number of completed PhD degrees as reported in the annual reports is too low, the same is probably also true at the Master’s level.⁹

4.3 Master’s and PhD degrees and discipline areas

As discussed above it is difficult to establish the exact number of Master’s and PhD students who completed their degrees within NUFU-supported projects. In the following discussion, the number of completed degrees as reported annually by the project coordinators is considered in most contexts, as these data are more detailed and comprehensive than numbers from the final project reports. However in some contexts we refer to data on PhD students from the final project reports.

As shown in table 4.1, a total of 296 students fully funded by NUFU are reported as completed in the annual project reports. Approximately one fourth of these degrees were at PhD level, and the remaining three fourth at Master’s level. In addition 77 degrees have been completed with partial funding from NUFU, while another 136 South students involved in NUFU projects completed their degrees without NUFU funding.

The NUFU-funded projects have educated Master’s and PhD students from a large number of disciplines. Almost 50 per cent of the degrees completed with full funding from NUFU were from the main disciplines of mathematics, natural sciences and technology. 40 per cent came from humanities or social sciences, while the remaining degrees were divided between medical sciences, agricultural and fisheries sciences, and a combination of the main discipline areas.

Many projects report about minor or – in some cases – major constraints in the education of Master’s and PhD students. Typical constraints include late recruitment of students at participating institutions, individual health and family concerns, and the fact that heavy (non NUFU-related) workload among PhD students in terms of teaching and administration in their respective departments made it difficult for many students to finish their degrees on time. Some projects report that a challenging political and economic situation in the country has impeded the education of students. A number of students have discontinued their studies for different reasons. Such factors have had an impact on the final number of students educated through the NUFU projects.

4.4 Study models and awarding institutions

24 per cent of students that are reported to have completed their degrees with full funding from NUFU have studied in a sandwich model, which for most or all of these students meant that their degree studies included one or more study periods in Norway. The percentage varies clearly between Master’s and PhD level. As seen in figure 4.1 86 per cent of the Master’s students have stayed at their home institution in the South for the full duration of their degree studies. On the other hand, 79 per cent of PhD students fully funded by NUFU have combined stays in Norway and in the South in a sandwich model.

95 per cent of Master’s students and 78 per cent of PhD students fully funded by NUFU received their degrees from institutions

Table 4.1 Completed degrees



	Master’s		Total Master’s	PhD		Total PhD	Total
	Female	Male		Female	Male		
South students fully funded by NUFU	110	109	219	18	59	77	296
South students partly funded by NUFU	10	28	38	8	31	39	77
South students with other funding	54	71	125	5	6	11	136
Norwegian students	35	16	51	1	1	2	53
Total	209	224	433	32	97	129	562

outside Norway, normally in their home countries. Only 9 per cent of NUFU-funded students were awarded a Norwegian university degree. For students partly or fully funded by other programmes the pattern is somewhat different, partly because many of these students were admitted at Norwegian institutions through the Quota Scheme or Norad Fellowship Programme.

4.5 Contribution to capacity building

The projects were asked to explain in their final reports how the educational activities have contributed to capacity and competence building in the departments/faculties. The reports show that NUFU-funded students contribute to the strengthening of their departments as staff members with enhanced expertise which they have gained through the NUFU-funded training. Increased capacity to teach new Master’s and PhD students is an important result, as highlighted by the following project:

“During this project phase the Awassa College of Agriculture started education at MSc level with several programmes in various agricultural sciences. Competence building during previous phases of the NUFU project as well as support from Norad/The Norwegian Embassy and other sources have contributed to the capacity that has made this possible. The capacity is now growing fast and we discuss the opening of PhD programmes which we believe will be possible in the near future. ... Hawassa University has contributed

with one staff (a former NUFU scholar) who became President of a new university, and also contributes with a number of MSc-graduates becoming teaching staff in the new universities [in Ethiopia].”
From Final Report – Enhancing food production and nature management (Hawassa University/Norwegian University of Life Sciences).

Another project points to success factors, but also to impediments to capacity building:

“All the PhD candidates are permanent faculty members of the Institute of Engineering, Tribhuvan University. The education and research opportunities provided by the project enhanced their capacity and competence to a level so as to become potential PhD supervisors. ... The awareness and competence in development issues are also enhanced at the Norwegian University of Science and Technology (NTNU) even if the overall objective is on capacity and competence building at the institutions in the South. The NUFU Programme had a significant long term effect on capability for relevant research and research-based education and supervision at universities in the South. In the short term, however, it is a paradox that the present shortage of capacity hampers activities to increase that capacity, as for instance, the heavy teaching load on PhD candidates.”

From Final Report – Post Graduate Research Collaboration at IOE, Tribhuvan University and NTNU (Tribhuvan University/Norwegian University of Science and Technology).

Figure 4.1 Study model

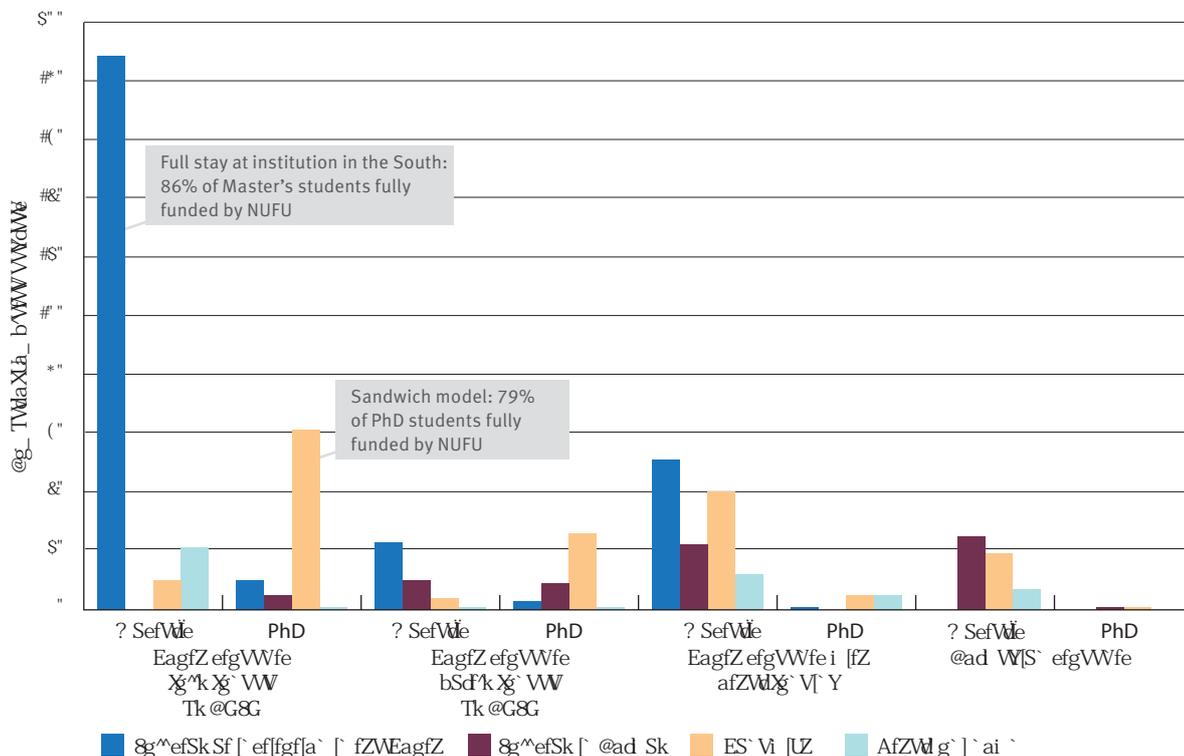
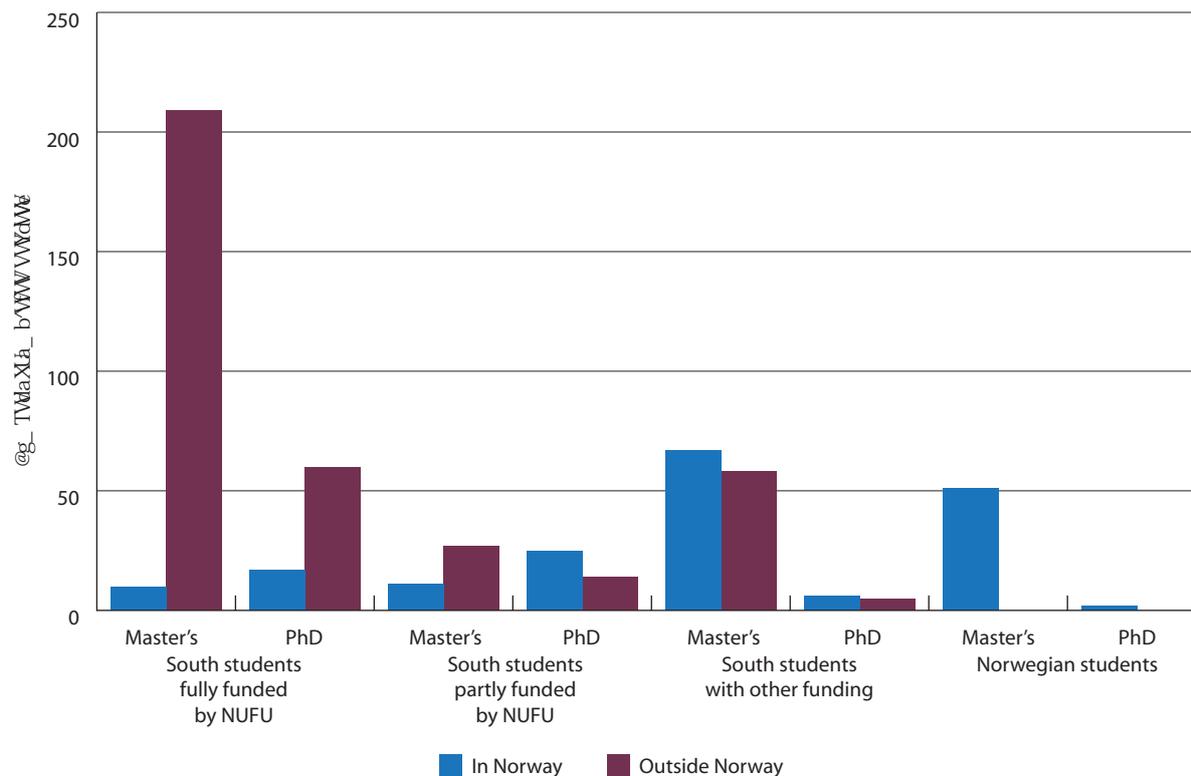


Figure 4.2 Degree awarded at institution in or outside Norway



The long-term perspective of capacity building is also noted in the following citation from a final project report:

“The gradual capacity building of human resources at the Institute of Community and Public Health at Birzeit University, supported by NUFU and Norad, and in active cooperation with the Faculty of Medicine at the University of Oslo, is today becoming evident. Strengths in the areas of epidemiology, reproductive health and youth nutrition have supported the Institute to become a centre of excellence in the production of valid and reliable evidence for policy formulation, planning and interventions. Furthermore, the Institute has acquired the needed legitimacy locally to become one of the main centres of learning and research in the country.”
From Final Report – Building Competence in Epidemiology in Palestine – Taking over and maintain phase (University of Hebron/ University of Oslo).

4.6 Synergies with other funding programmes

As shown above, far from all students reported by the projects with completed degrees were fully funded by NUFU. 27 per cent of reported students from the South did not receive any financial support from NUFU, while 15 per cent are reported as partly funded by the NUFU Programme. The latter group probably includes students that received NUFU scholarships for parts of their degree studies or

NUFU funding for study or research related activities such as field work. The fact that a large number of students from institutions in the South are reported through NUFU projects although their scholarships were not NUFU funded, proves that synergy between NUFU and other programmes is prevalent.

A number of projects combine NUFU funding with financial support from sources such as the Research Council of Norway, the European Union, Fredskorpset (FK Norway) and various private foundations. This type of funding often increases the Norwegian participation in the projects.

Moreover, many students with funding from Norwegian programmes, such as the Quota Scheme and the Norad Fellowship Programme, were involved in NUFU-supported projects. The cooperating institutions have made use of these programmes to secure funding for students involved in their projects. 58 per cent of South students partly or fully funded by other sources than NUFU received support from the Quota Scheme or Norad Fellowship Programme, with Quota scholarships as the most common type of funding. The Quota Scheme in particular accommodates for this kind of synergy by offering scholarships for students from institutions with cooperation agreements with Norwegian institutions, for instance through the NUFU Programme. Thus the Quota Scheme contributes significantly to the strengthening of NUFU-funded projects and to capacity building at the partner institutions in the South. By participating in NUFU projects in cooperation between

institutions in the South and their host institutions in Norway, the Quota and Norad funded students have established strong ties to academic environments and possible future employers in their home countries.

4.7 Magne Lerheim scholarship

The Norwegian Ministry of Foreign Affairs entered in 2001 into an agreement with the Research Council of Norway (RCN) about a limited programme for recruitment of Norwegian researchers connected to projects supported by the NUFU Programme. A total amount of 13 million NOK was set aside for this purpose. The scheme was named after one of the “founding fathers” of the NUFU Programme, University Director Magne Lerheim at the University of Bergen.

In 2002 RCN allocated funds for six PhD and two post-doctoral scholarships, in addition to smaller allocations for study and travel allowances for Master’s students. In 2007 RCN undertook a self-evaluation of the scheme, concluding that some of the scholarships that were granted had been very fruitful for the NUFU-supported projects, since they had contributed to broaden the project team, and to secure time and resources for follow up of the project on the Norwegian side. The affiliation to the relevant NUFU-supported project was not equally close for all projects and the evaluation report pointed out that there had been little or no exchange of information between RCN and SIU regarding the administration of the two programmes/schemes.

Coordinators for NUFU-funded projects with recipients of Magne Lerheim scholarships have reported positive effects of the funding:

“The Magne Lerheim scholarship provided crucial partial funding for three North-based Master’s students, and for one post-doc scholarship for one of the coordinators of the project. Funds from the Magne Lerheim scholarship have been decisive for the success in reaching the goals of the project, and have been crucial in competence building on the Norwegian side in international health.” *Final report – Gender, generation and communication in times of AIDS: The potential of ‘modern’ and ‘traditional’ institutions (University of Dar es Salaam/University of Bergen).*

“The research project ... was integrated in the NUFU project. The Norwegian PhD candidate was matched with a PhD candidate from the University of Limpopo. Together they have run the project. The Norwegian candidate has had her strength in research methodology and the South African candidate has had her strength in her expertise on the local culture and local language. They have shared their knowledge and supported each other in a very fruitful way.” *Final report – The Psychology Co-Operation Programme UoO/UNIN (University of Limpopo/University of Oslo).*

4.8 Employment after degree completion

In their final reports the projects describe what PhD students educated only or partly from NUFU funds were doing after degree completion. Although the reported number of educated students is inaccurate, the reports clearly indicate that a majority of the students were staff members at higher education institutions in the South after having finished their studies.

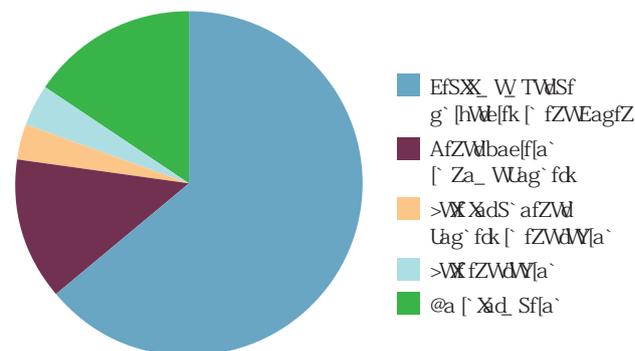
According to the final reports only 4-5 per cent of the educated PhD students with NUFU funding had left the region by the end of the project period. At least 60 per cent of the students are reported as staff members at universities in the South after their degree completion.

The fact that a high percentage of PhD students hold positions at universities in their home country after the completion of their degree indicates that measures taken in the NUFU Programme to avoid brain drain are to a large extent successful. The NUFU Programme rests on the principle of close collaboration between project partners in Norway and the South. NUFU funding provides possibilities for research and training at the universities in the South and encourages institutions and researchers to create stronger and more attractive research environments in the South. Researchers from partner institutions cooperate in running the research and educational activities. While short-term mobility of researchers from South to North and vice versa is an integrated element of most NUFU-funded projects, the researchers keep the bonds to their home institutions throughout the project period.

The same is true for Master’s and PhD students. As shown above, a large majority of students with NUFU scholarships receive their degrees from their home institutions in the South. At the same time most PhD students have one or more research stay in Norway as part of their PhD degrees. Such visits provide interesting opportunities to travel abroad and to obtain international experience and training, which is valuable to their research and to their future career at institutions in the South. While receiving international research experience from the NUFU collaboration the students maintain their ties to their home institution as (prospective) staff members. The advantage of sandwich model training is also backed by the World Bank report *Accelerating Catch-Up: Tertiary Education for Growth in Sub-Saharan Africa*.¹⁰

Nevertheless some projects report difficulties in recruiting and retaining students due to pressure to emigrate or pursue other interests. It should also be noted that the data on employment after degree completion for the most part are gathered a relatively short period after the PhDs completed their degrees. It is not possible to say from the present statistical data to what degree NUFU-funded PhDs stay at their institutions for a longer period after the completion of their degree and the end of the NUFU-supported project.

Figure 4.3 NUFU funded PhD students after degree completion



4.9 Sustainability of capacity

It is an underlying assumption that partner institutions in the South should be capable of administering and maintaining activities upon termination of NUFU funding. Most institutions in the South consider this issue to be of great importance. According to the evaluation of the NUFU Programme in 2000 sustainability was most easily discerned within staff development, infrastructural support and curriculum development. The evaluation also found that sustainability was greater in broader-based projects rather than small projects involving a limited number of researchers only.

As shown above students educated within the frame of NUFU-supported projects normally continue as staff at universities in the South upon graduation. The availability of adequate infrastructure, which in many cases has been built up during the project, increases the chances of retaining academic staff as it gives them an opportunity for research.

However, the main obstacle to sustainability is still reported to be loss of staff. Capacity and competence building also has the effect of improving employability at the individual level. Low salaries at many partner institutions represent a threat in this respect: Both business and industry, as well as a growing private educational sector in many countries, such as Tanzania, offer competitive salaries and may well appear as more attractive career alternatives.

In cases where staff are leaving for a different academic institution or are offered positions in government agencies, the loss of highly-qualified staff may have negative implications at one institution but corresponding positive effects at the destination body, be it an academic institution or a government agency.

4.10 Development of courses and programmes

The NUFU Programme includes funding possibilities for development of educational programmes and courses at Master's and PhD level at participating institutions. The projects report to have developed a total of 84 courses and programmes. The levels are shown in table 4.2.

Table 4.2 Development of educational courses and programmes



	Master's level	PhD level	Not specified	Total
Degree course	47	6	5	58
Degree programme	18	5	0	23
Not specified	1	0	2	3
Total	66	11	7	84

4.11 Training of technical and administrative staff

Many NUFU projects included funding for the training of technical and administrative staff members in connection to NUFU project activities. Such activities seem to have been particularly important in projects with the need to train staff for the management of technical equipment. A total of 76 staff members at institutions in the South received training through 27 NUFU-supported projects. 45 per cent of the staff members were female and 55 per cent male. See table 4.3 for details.

Table 4.3 Training of technical and administrative staff



	Female	Male	Total
Technical	11	27	38
Accountancy	3	10	13
Administration	11	4	15
Other	9	1	10
Total	34	42	76



5. Gender Issues

5.1 Gender equality in academia

Gender equality is a challenge to the academic community all over the world. Whereas the number of students in higher education is quite balanced in many Western countries, with even a majority of female students in countries like Norway, the pattern of inequality in senior academic and research positions is universal.

In most developing countries, especially in Africa, there is inequality based on exclusion and marginalisation at all levels of education, with higher education and research having the highest level of inequality.¹¹ There are significant gender gaps in student enrolment in universities and other tertiary education institutions, but gender gaps are generally wider when it comes to academic staff members. Figures from 2003 show that the percentage of female academic staff members is low throughout Africa, with Ethiopia the lowest at 6 per cent, and Uganda rating highest at 20 per cent.

The inequalities are explained in different ways by researchers. Cultural factors are often mentioned, mostly related to the traditional role of women as wives, mothers and care-givers.

*“Since both men and women place great value on “family” – and women are considered the rightful keepers of the family in terms of seeing to its daily maintenance – this creates a difficult position for professional women who, on the one hand, want to ensure that their family obligations are met and, on the other hand, need to put extra time and effort into their careers if they wish to advance. [...] Moreover, responsibility for extended families continues to be significant in African societies because of the lack of pension plans or state health and welfare systems that could provide assistance to needy family members. Thus the family obligations of women often go far beyond simply caring for their own children”.*¹²

However, researchers have also pointed to the fact that universities themselves tend to employ an institutional culture where gender inequality is reproduced, rather than challenged.¹³ Mama points to the fact that the experience of women faculty has remained largely un-researched, but she holds that: “Anecdotal evidence indicates that the hierarchies of power are sexualised in ways that reflect conservative gender ideologies, notably the unequal gender division of labour between the domestic and professional spheres.”¹⁴ A self-replicating institutional culture is a vicious circle which is difficult to break.

Increasing the number of female academic staff may not be sufficient to deal with the inherited gender gap in academia. Affirmative action like the “add-women-in” approach, where women are given priority in recruitment to positions and study programmes, will

not automatically redress the balance and produce gender equality. This approach must be complemented by a more sustained development of specialised intellectual capacities to conceptualise and analyse the situation and advance gender mainstreaming, as pointed out by Mama.

Rathgeber also points to the fact that unless educated women in Africa and elsewhere analyse their own situation and recognise that they are systematically discriminated and marginalised, it is unlikely that there will be any dramatic changes in the status of women in African universities or society in general.¹⁵

5.2 Gender objectives for the NUFU Programme 2002-2006

The Strategic Plan for the NUFU Programme 2001-2005 set out a very specific target for gender balance in terms of number: “The proportion of women researchers from the South (including PhD students) shall amount to 40 per cent of the total number of researchers in the period”.

If this target was to be reached it would have needed to be imperative and in the mind of the NUFU Programme Board when the selection of projects for the period was made (to secure the proportion of project coordinators and researchers) and in the mind of project coordinators and others involved in recruitment and selection processes when PhD students were identified. The researchers and students would perhaps also have needed specific supportive measures to be taken in order for them to be able to continue and complete their research and/or degree.

The Strategic Plan also included a very general objective on the integration of women and gender perspectives in the collaborative projects. It is stated that “the gender and women’s perspective is to be integrated more strongly into the various activities of the NUFU Programme”.

However, it seems that this objective to some extent has been neglected in the implementation of the programme. Projects and institutions have not been asked to report specifically on gender perspectives. Neither has there been any specific thematic focus on such perspectives in conferences, seminars or other events during the programme period.

The issue of gender mainstreaming has been taken forward with an increased focus in the fourth NUFU programme period 2007-2011.

5.3 Results on the proportion of female students and researchers

Most of the NUFU-supported projects report that they have employed a clear strategy for recruitment of female students to PhD and Master's studies. Several projects have experienced obstacles to the recruitment of women, and some report that it has proved to be impossible to recruit female students, especially at the PhD level.

Tables 5.1-5.4 show the proportion of women among students from the South who are reported by NUFU-supported projects to have completed their degrees.¹⁶ The figures show that the target regarding gender balance has been met at Master's level, whereas there is a significant gap at PhD level.

The overall proportion of female PhD students from the South in projects supported by NUFU was 24 per cent. Figures from annual project reports show that among the total number of PhD students registered during the period 2002-2006 (including students who did not complete their degrees), 30 per cent were female. This indicates that the drop-out rate among the female students has been higher than among their male colleagues.

The difference in achievement of gender balance at Master's and PhD level can to a great extent be explained by the factors highlighted above. The gender imbalance throughout the education system in many countries increases at the highest levels, and particularly in some discipline areas it might be very difficult to find qualified female students for recruitment to PhD. This is reinforced by the fact that it is a requirement in the NUFU Programme that PhD students should be staff members or prospective staff members at the institution in the South. This may in practice mean that the source group for recruitment of students in some cases is very sparse, and that it may be difficult or even impossible to recruit women for the scholarships.

The target of 40 per cent female participation included not only students, but also researchers. Table 5.5 shows the distribution of female and male researchers, from institutions in the South and institutions in Norway respectively.

The table shows that the number of female researchers involved in the NUFU Programme is significantly lower than the number of male researchers. The differences are found at institutions in the South as well as at Norwegian institutions. At the institutions in the South the proportion of female researchers corresponds more or less to the proportion of female PhD students. As an overall trend about one out of four researchers and PhD students from the South involved in the NUFU Programme female. For Norwegian researchers the share is a bit higher, with one out of three researchers being female.

Table 5.1 Completed degrees – South students fully funded by NUFU



	Female	Male	Total	% female
Master's level	110	109	219	50
PhD level	18	59	77	23

Table 5.2 Completed degrees – South students partly funded by NUFU



	Female	Male	Total	% female
Master's level	10	28	38	26
PhD level	8	31	39	21

Table 5.3 Completed degrees – South students with other funding



	Female	Male	Total	% female
Master's level	54	71	125	43
PhD level	5	6	11	45

Table 5.4 Total number of completed degrees by South students involved in NUFU-funded projects



	Female	Male	Total	% female
Master's level	167	203	370	45
PhD level	31	96	127	24
Total	198	299	497	40

Table 5.5 Gender distribution – researchers



	Female	Male	Total	% female
Researchers from institutions in the South	154	491	645	24
Researchers from Norwegian institutions	114	214	328	35
Researchers – home institution unknown	12	55	67	18

5.4 Factors leading to gender imbalance

The figures show that it is much more difficult to reach the stated objectives concerning gender balance at PhD level than it is at Master's level. The reasons for this rest partly with imbalances that occur in the education systems of many countries in the South, where girls/women are underrepresented at the higher levels. The source group for recruiting female students for PhD studies is therefore much smaller. Access to PhD education is not only a financial question of providing scholarship grants for the female students. Pregnancies, births, family obligations and child care are other conditions making education at the PhD level more difficult for female students compared to their male colleagues. In some countries general attitudes towards women's education may also be a factor that hampers female participation at PhD level. Projects have in their reports to SIU mentioned factors as indicated above, but also factors such as a lack of secure facilities related to field work in remote areas and problems related to long-term stay abroad during the study period.

“Long-term stay in Norway as part of the degree programs represents a huge challenge to the candidates who most often have to leave their families back home in Tanzania The family separation issue is probably felt the strongest among female researchers having to live abroad for extended periods of time”.

Final report – Health Systems Research and Health Promotion in Relation to Reproductive Health in Tanzania (Muhimbili University College of Health Sciences/University of Bergen).

“Several of the PhD and Master's students financed by the project have given birth during the project period. This has caused delays, but all candidates, except for one who withdrew in the second year, have finished.”

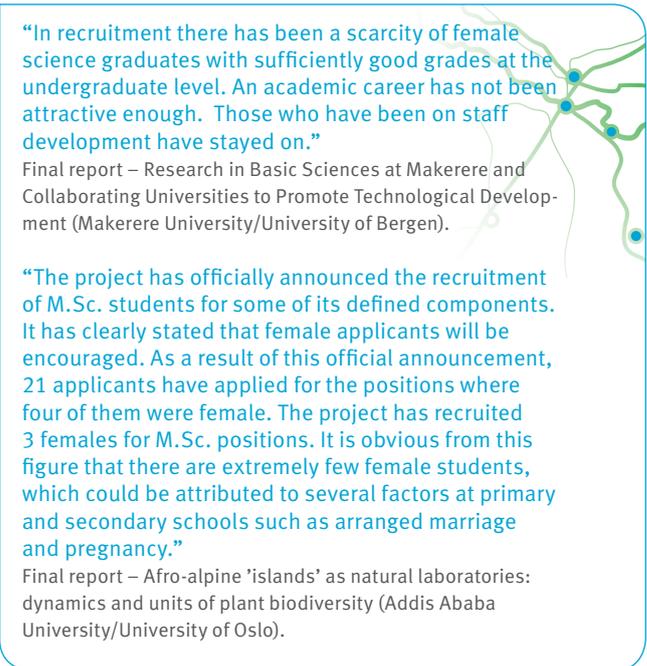
Final report – Gender, generation and communication in times of AIDS: The potential of ‘modern’ and ‘traditional’ institutions (University of Dar es Salaam/University of Bergen).

The already mentioned gender imbalance among academic staff members at universities in the South is probably one of the reasons why so few female researchers have been involved in programme activities.

“The main obstacle is the fact that the number of female students at Eduardo Mondlane University is as low as four females per level. It is particularly difficult to persuade females to choose education within mathematics and informatics. Finally, it is yet more difficult to recruit female students in their last year at the university, as many already have a family and have to concentrate on their home duties and part-time jobs.”

Final report – Competence building in research, teaching and application of mathematics and informatics in Mozambique (Eduardo Mondlane University/Norwegian University of Life Sciences).

It is interesting to note that the overall share of female researchers from the South in the NUFU-supported projects is higher than the share of female academic staff even in the best-performing country in Africa (Uganda).¹⁷ This fact may be interpreted as a positive effect of the focus on gender issues and gender balance that, despite its insufficiency, has been promoted in the third NUFU programme period.



“In recruitment there has been a scarcity of female science graduates with sufficiently good grades at the undergraduate level. An academic career has not been attractive enough. Those who have been on staff development have stayed on.”

Final report – Research in Basic Sciences at Makerere and Collaborating Universities to Promote Technological Development (Makerere University/University of Bergen).

“The project has officially announced the recruitment of M.Sc. students for some of its defined components. It has clearly stated that female applicants will be encouraged. As a result of this official announcement, 21 applicants have applied for the positions where four of them were female. The project has recruited 3 females for M.Sc. positions. It is obvious from this figure that there are extremely few female students, which could be attributed to several factors at primary and secondary schools such as arranged marriage and pregnancy.”

Final report – Afro-alpine ‘islands’ as natural laboratories: dynamics and units of plant biodiversity (Addis Ababa University/University of Oslo).

5.5 Gender perspectives in research

There are a few projects in the portfolio which have gender issues at the core of their thematic focus, and where gender perspectives are integrated in all project activities.

Examples of such projects are:

- Urbanisation and gender in Ethiopia
- Globalization and changes in the cultures of survival and care: The case of Ghana
- Country-wide time use by gender and advanced analysis of census data
- The psychology co-operation programme UoO/UiN

All projects have in their final reports been asked to state how gender issues have been integrated into research activities. Several projects have seen this question as irrelevant, or they have reported that no measures have been taken, except for steps regarding recruitment.

Projects that have a gender focus in their research may also have a clearer attitude towards recruitment of women and gender equality in all project activities, as illustrated by this quotation:

“The gendered division of labour is at the very centre of our research, and has been reflected at all levels of the project. Women have been drawn into research activities to the same extent that men have.”

Final report – Globalization and Changes in the Cultures of Survival and Care: The Case of Ghana (University of Ghana/University of Bergen).



6. Scientific Output and Quality

6.1 Scientific publications

Scientific articles published in recognised refereed international journals are benchmarks of scientific quality and the most important indicator of the quality of research conducted in NUFU-funded projects. The projects funded by NUFU for 2002-2006 reported annually on published articles, books, parts of books and reports/theses, but also on dissemination activities such as lectures, workshops and media exposure.

Based on estimates given in the NUFU project documents, the total number of scientific “products” expected to come out of the projects for the whole period (2002-2006) was 1906.

However, the total number of reported publications and dissemination activities according to the annual project reports was as high as 3968 for the period. A total of 1259 articles were reported by the projects, in addition to 216 books, 278 parts of books and 557 reports/theses, which in total amounts to 2310 written scientific products.

Not all the articles and other written products have been published. For instance, 852 out of 1259 articles were reported as published, while the remaining 407 were reported as not published or with no information on the publishing status. A large number of the articles where publishing data is lacking were reported in an early phase of the programme period. Unfortunately, the details provided by the reporting format for this period are scarce.¹⁸ For a number of the articles reported later in the programme period, the publishing had not been completed (or not yet secured) by the end of the project period or when the articles were reported.

In any case the impression remains that the production of publications and dissemination activities was higher than expected at the outset of the programme period. This indicates that NUFU-funded projects in general have been successful with regard to scientific output, and that the projects have generated activities and products that might not have been foreseen at the beginning of the period.

6.2 Peer-reviewed articles

The projects were asked to report whether the articles were published in peer-reviewed journals. 50 per cent of the articles (424 out of 852) that were reported as published appeared in peer-reviewed journals, according to the annual reports. This is likely to be an underestimate as information is lacking for many reported articles.

In their final reports the projects counted the number of articles published in peer-reviewed journals throughout the project period. The total number of published articles in peer-reviewed journals amounted to 473, which is somewhat higher than the numbers from the annual reports. In addition 87 articles are listed as “to be published”, which means that the total number of peer-reviewed articles as result of the NUFU-funded projects is reported to be 560. Almost 50 per cent of the peer-reviewed articles appeared in international journals, while one third were published in national or regional journals in the South and the remainder in national or regional journals in the North.

6.3 Quality in relation to relevance

In the NUFU context it is necessary to apply a broad concept of quality that includes the fulfilment of the objective of safeguarding relevance in regard to poverty reduction and national development in the South. While publications in international peer-reviewed journals indicate that the scientific production is of high quality, publication and dissemination of research results at national and regional level may be of greater importance in terms of impact, as it reaches a wider community. As seen in this chapter, NUFU-supported projects have made use of a number of different channels at national, regional and international level to disseminate the findings from their research. Together these publications and dissemination activities contributed strongly to the quality and relevance of the NUFU Programme.

Figure 6.1 Articles published in peer-reviewed journals

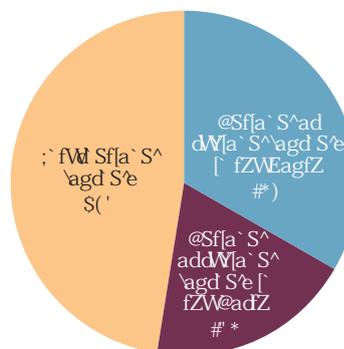


Table 6.1 Scientific publications and dissemination activities

Main category	Total
Article	1259
Book	216
Part of book	278
Report/thesis	557
Lecture	972
Workshop	441
Exhibition	56
Media exposure	95
Product	29
Not given	65
Total	3968

Table 6.3 Peer-reviewed articles

Main category	Peer-reviewed	Published	Not published	Not given	Total
Article	Yes	424	69	23	516
	No	67	4	10	81
	Not given	361	66	235	662
Total		852	139	268	1259

Table 6.2 Scientific publications

Main category	Sub-category	Published	Not published	Not given	Total
Article	Scholarly article	778	131	80	989
	Book review	8		1	9
	Editorial	12	4		16
	Feature	5		2	7
	Letter to the editor	10			10
	Paper			1	1
	Popular science article	23	4	4	31
	Report	1			1
	Scholarly lecture	1			1
	Synopsis	14		3	17
	Not given			177	177
	Total Articles		852	139	268
Book	Scholarly article	1			1
	Annotated edition	1			1
	Collection of articles	44	4	4	52
	Dictionary	5		1	6
	Entry in encyclopedia	1		1	2
	Popular science	4		1	5
	Reference book	6	1	1	8
	Scholarly monograph	56	4	3	63
	Textbook	33	3	1	37
	Translation	1			1
	Not given			40	40
Total Books		152	12	52	216
Part of book	Chapter/article in book	194	29	25	248
	Scholarly article	4		1	5
	Entry in encyclopedia	4			4
	Other	3	16	1	20
	Not given			1	1
Total Parts of books		205	45	28	278
Report/thesis	Report	192	55	23	270
	Master's thesis	79	67	33	179
	PhD thesis	30	10		40
	Compendium	4			4
	Paper	1			1
	Scholarly monograph	2			2
	Not given	1		60	61
Total Reports/theses		309	132	116	557
Total		1518	328	464	2310

7. National Development and Poverty Reduction

7.1 Institutions of higher education and research as actors in development processes

The UN Millennium Development Goals (MDGs) express the commitment of the international community to joint efforts to reduce poverty in various regions of the world. As a part of the process of reaching these goals, increased capacity in human capital formation in developing countries within a number of fields is a crucial step towards reduced dependence on foreign development assistance. Higher education and research has been one of the key engines of change in the historical development of advanced economies. Not only does higher education have an intrinsic value for all societies, it is also central for the achievement of autonomous and appropriate sustainable development.

It was an assumption among “donors” for many years that support to higher education was dramatically less cost-effective than supporting basic education. However, studies made over the last ten years have shown that this is not a valid conclusion. Depending on the context, and in globalised emerging knowledge economies, investment in higher education may yield better returns, as stated in a 2006 Nuffic study.¹⁹

There has been a shift in the attitudes of international agencies and institutions towards increasing the support to higher education. However, many agencies and countries still lack a holistic perspective on the education system, and tend to give support only to basic education, ignoring the fact that increased basic education creates a demand for increased capacity in higher education, and that higher education can contribute to improving quality and increasing participation in basic education by providing relevant education for teachers, teacher trainers and government officials.²⁰

Strengthened institutions of higher education and research, as well as national strategies and priorities in this sector, will strengthen the capacities of a country to achieve the MDGs by providing high-level skilled professionals for the public and private sectors. Strong institutions of higher education and research will contribute to sustainable poverty reduction efforts, and will make countries more independent.

As stated in the NUFU strategy 2001-2005: “Research and educational cooperation between countries in the North and South is important because the universities in the South act both as a driving force and as a critical and independent voice in the development of society, something that must be supported in a global context.”

Projects in the NUFU programme portfolio 2002-2006 contributed to the achievement of such intrinsic as well as instrumental goals. NUFU-supported projects were related to many areas of development in the South that are emphasised in the MDGs in particular and in international and national strategies for poverty reduction in general.

Since their adoption in 2000, the MDGs have also been clearly reflected in Norwegian official policy towards development cooperation with partner countries in the South. Even if it is not mentioned in the strategy for the NUFU Programme 2001-2005, nor in the NUFU agreement from 2001 that projects supported by the NUFU Programme in particular should contribute to national development and poverty reduction, it is an aim of most projects to do so. Since 2004 a chapter in the annual reports for the NUFU Programme has been devoted to reflections on the NUFU Programme’s contributions to development and poverty reduction.

7.2 NUFU-supported projects and the MDGs

The NUFU Programme is a programme within the field of education, supporting institutions of higher education and research in developing countries. At the same time, the thematic areas in which research and capacity building is carried out cover a wide range of fields.

A number of NUFU-supported projects have research topics directly related to one or more MDG, in the context of the country or region. Table 7.1 provides examples of projects related to each of the seven MDGs.

Other research topics focused by NUFU-supported projects, which are not covered directly by the MDGs, but still relevant for poverty reduction and national development are: water management, issues related to indigenous peoples, science and technology, and democracy.

7.3 Impact of NUFU-supported projects on poverty reduction and national development

It is very difficult to assess the specific impact of research projects at national level. It is hard to trace knowledge and capacity, and it is impossible to count the number of poor people that may have benefited from the programme. However, projects and institutions have reported that knowledge produced by projects has led to



Table 7.1 NUFU-supported projects and the Millennium Development Goals

Millennium Development Goal	Project titles
Eradicate extreme poverty and hunger	<ol style="list-style-type: none"> 1. Enhancing food production and nature management 2. The new phases of poverty in Ghana 3. Genetic diversity and rapid propagation of two important fruit trees in Malawi 4. Lungwena Health, Nutrition and Agricultural Multidisciplinary Project – towards poverty reduction 5. Improved Utilization of Agricultural By-products for Animal Feed in Vietnam and Laos
Achieve universal primary education	<ol style="list-style-type: none"> 1. Joint linguistic research concerning the implementation of the Ethiopian educational policy with respect to the use of vernaculars in elementary schools. 2. Research, Innovation and Postgraduate Competence Building in Special Needs Education towards Inclusion” – Ethiopia – Uganda – Norway 3. Research concerning the integration of national languages into the educational system in Mali 4. Graduate Studies in Science, Mathematics and Technology Education – GRASSMATE 5. The language of instruction in South Africa and Tanzania – a research cooperation with a training component (LOITASA)
Promote gender equality and empower women	<ol style="list-style-type: none"> 1. Urbanisation and Gender in Ethiopia 2. Globalization and Changes in the Cultures of Survival and Care: The Case of Ghana 3. Country-wide time use by gender and advanced analysis of census data
Reduce child mortality	<ol style="list-style-type: none"> 1. Research and Training in Southern Africa for the Development and Evaluation of New Childhood Vaccines 2. Essential Nutrition and Child Health in Uganda: A Research Project to Promote Innovative Community-based and Clinical Actions 3. Program to improve child health and nutrition in South Asia
Improve maternal health	<ol style="list-style-type: none"> 1. Urogenetical occurrence and persistence of Group B streptococcal colonization in pregnancy and pregnancy outcome in Zimbabwe
Combat HIV/AIDS, malaria and other diseases	<ol style="list-style-type: none"> 1. Health Information System Programme (HISP) – A network programme for empowerment of the marginalized in the globalizing world – ‘Inclusion of the excluded’ 2. Health Systems Research and Health Promotion in Relation to Reproductive Health in Tanzania 3. Gender, generation and communication in times of AIDS: The potential of ‘modern’ and ‘traditional’ institutions 4. The use of medicinal plants in primary health care in Uganda 5. Strengthening HIV-related interventions in Zambia: cooperation in research and institution capacity building
Ensure environmental sustainability	<ol style="list-style-type: none"> 1. Biodiversity of Eastern Africa – taxonomy, conservation and use 2. Solar Energy in Mozambique, General Studies and Development of Concentrating Systems 3. Nature Conservation and Management: Biodiversity in coastal Maputaland: links between geology and ecology 4. Education, Research and Training for Sustainable Management of Natural Resources in Watersheds of Nepal 5. Aquaculture and coastal management in Vietnam – environmental capacity, biodiversity and fish health in culturing systems

change in policies and practices at different levels, and that staff members with increased competence have been used as advisers and dialogue partners in policy making processes. Other projects have intervention components, and have had a direct impact on people's lives in local communities.

Some examples from final reports from projects are cited below:

“Strengthening the local, regional and national capacity in HIV-prevention and AIDS-related coping strategies have both direct and indirect impact on people's wellbeing and possibilities for education, income-generating activities, farming etc.”

From Final Report – UiB/UDSM Counseling, Education and Health Promotion: A Research and Competence Building Programme (University of Dar es Salaam/University of Bergen).

“Learning to read and write in a language you understand improves literacy. Knowing how to read and write in a local language improves learning in other subjects, including foreign languages. Literacy in national languages thus improves education in a general way. Education is, in its turn, one of the best ways to reduce poverty.”

From Final Report – Research concerning the integration of national languages into the educational system in Mali (University of Bamako/University of Oslo).

“The project on support groups for HIV-positive persons has in particular made an important contribution to poverty reduction, since an important part of the intervention was helping the participants to start small-scale businesses.”

From Final Report – The Psychology Co-operation Programme UoO/UNIN (Limpopo University/University of Oslo).

“The research on the conditions of poverty provides valuable knowledge that may be used by government and donors who are working in the area of gender and poverty.”

From final Report – Urbanisation and Gender in Ethiopia (Addis Ababa University/University of Tromsø).

“The project has contributed towards poverty reduction and national development in Mozambique through transfer of technology to society. The project team has been working quite extensively with governmental and non-governmental organisations and also with the private sector in facilitating the introduction of renewable energy systems in a rural context.”

From Final Report – Solar Energy in Mozambique, General Studies and Development of Concentrating Systems (Eduardo Mondlane University/Norwegian University of Science and Technology).

Notes

- ¹ Norwegian Ministry of Foreign Affairs (2000): Evaluation of the NUFU Programme: Norwegian Council of Universities' Programme for Development Research and Education, Evaluation report 5/2000.
- ² A fruitful example is the Makerere University – University of Bergen cooperation.
- ³ Norad (2007): Mot en mer kunnskapsfokuset utviklingspolitikk: Plattform for bilateral bistand til høyere utdanning og forskning i utviklingslandene (Towards a more knowledge-focused development policy: A platform for bilateral aid for higher education and research in the developing countries).
- ⁴ World Bank (2008): Accelerating Catch-Up: Tertiary Education for Growth in Sub-Saharan Africa, Synopsis, p. 5.
- ⁵ World Bank (2008), p. 12.
- ⁶ The same distributional pattern applies to the total number of 1023 registered students, of which 55 per cent are reported as completed, 10 per cent as discontinued, and 35 per cent as enrolled only.
- ⁷ In addition 36 students (17 Master's and 18 PhD), all of them fully funded by NUFU, were enrolled in one single project that was discontinued, and therefore did not report any completed students.
- ⁸ Among PhD students fully funded by NUFU only 33 per cent are reported as completed.
- ⁹ The projects were not asked in the final reports for the number of educated students at Master's level. Nor did they report specifically on students fully funded by NUFU, i.e. with scholarships funded by the NUFU projects.
- ¹⁰ World Bank (2008), p. 20.
- ¹¹ Amina Mama (2003): Restore, Reform but do not Transform: The Gender Politics of Higher Education in Africa. *Journal of Higher Education in Africa*, Vol. 1, No 1, pp. 101-125.
- ¹² Eva M. Rathgeber (2003): Women in Universities and University-Educated Women. The Current Situation in Africa, in: Teferra, D. and Altbach, P. (Eds): *African Higher Education: An International Reference Handbook*, p. 88.
- ¹³ Mama (2003).
- ¹⁴ Mama (2003), p. 118.
- ¹⁵ Rathgeber (2003).
- ¹⁶ See chapter 4 for details on the number of students and completed degrees.
- ¹⁷ Mama (2003).
- ¹⁸ Most of these articles appear without information on sub-category in table 6.2.
- ¹⁹ Holtland, Gerrit and Ad Boeren (2006): *Achieving the Millennium Goals in sub-Saharan Africa. The role of international capacity building programmes for higher education and research*, Nuffic, Den Haag.
- ²⁰ World Bank (2008).

Appendix 1

Main partner institutions 2002-2006

Africa

Botswana

University of Botswana

Cameroon

University of N'gaoundéré

Ethiopia

Addis Ababa University
Hawassa University

Ghana

University of Ghana

Malawi

University of Malawi

Mali

National Centre for Scientific
and Technological Research
University of Bamako

Mozambique

Eduardo Mondlane University

South Africa

University of Kwazulu-Natal
University of Limpopo
University of Pretoria
University of the Western Cape

Tanzania

Muhimbili University College of Health Sciences
Sokoine University of Agriculture
University of Dar-es-Salaam

Uganda

Makerere University

Zambia

University of Zambia

Zimbabwe

University of Zimbabwe

Asia

Bangladesh

University of Dhaka

Nepal

Tribhuvan University

Sri Lanka

University of Colombo

Vietnam

National Institute of Animal Husbandry
Research Institute for Aquaculture No. 3
University of Fisheries

Latin America

Guatemala

University of San Carlos

Nicaragua

University of the Autonomous Regions of the
Caribbean Coast of Nicaragua

Palestinian areas

Al-Quds University
Birzeit University
University of Hebron

Norway

Chr. Michelsen Institute
Norwegian Institute of Nature Research – NINA
Norwegian School of Management BI
Norwegian School of Veterinary Science
Norwegian University of Life Sciences
Norwegian University of Science and Technology
NOVA – Norwegian Social Research
School of Mission and Theology
The Oslo School of Architecture and Design
University of Bergen
University of Oslo
University of Tromsø

Appendix 2

NUFU-supported projects 2002-2006

Africa

Botswana

University of Botswana

PRO 24 / 2002

Chemical studies of environmental samples (plants, water, soils, etc.) from mineralised zones and other vulnerable areas in Botswana
Partner: University of Oslo

PRO 46 / 2002

Collaborative programme for San (Basarwa) research and capacity building
Partner: University of Tromsø
Network cooperation

Cameroon

University of N'gaoundéré

PRO 44 / 2002

Ngaoundéré-Anthropos
Partner: University of Tromsø

Ethiopia

Addis Ababa University

PRO 21 / 2002

Joint linguistic research concerning the implementation of the Ethiopian educational policy with respect to the use of vernaculars in elementary schools
Partner: University of Oslo

PRO 29 / 2002

Population growth and land use in Central Ethiopia
Partner: Norwegian University of Science and Technology

PRO 30 / 2002

Implementation of M.Sc. programme and related research activities in road and transport engineering at Addis Ababa University
Partner: Norwegian University of Science and Technology

PRO 32 / 2002

Networking and capacity building of higher education institutions in Ethiopia
Partner: Norwegian School of Management BI

PRO 35 / 2002

Research, innovation and postgraduate competence building in special needs education towards inclusion – Ethiopia – Uganda – Norway
Partner: University of Oslo

PRO 51 / 2002

Urbanisation and Gender in Ethiopia
Partner: University of Tromsø

PRO 53 / 2003

Biodiversity of Eastern Africa (lilies, orchids and sedges) – Taxonomi, conservation and use
Partner: University of Oslo
Network cooperation

PRO 54 / 2003

Afro-alpine 'islands' as natural laboratories: Dynamics and units of plant biodiversity
Partner: University of Oslo
Network cooperation

Hawassa University

PRO 16 / 2002

Enhancing food production and nature management
Partner: Norwegian University of Life Sciences

Ghana

University of Ghana

PRO 31 / 2002

Computational lexicography, typology, and literacy and language development
Partner: Norwegian University of Science and Technology

PRO 34 / 2002

Tradition and modernity in Ghanaian history and development
Partner: Norwegian University of Science and Technology

PRO 55 / 2003

Globalization and changes in the cultures of survival and care: The case of Ghana
Partner: University of Bergen

PRO 56 / 2003

The new faces of poverty in Ghana
Partner: Norwegian University of Science and Technology
Network cooperation

Malawi

University of Malawi

PRO MA 69 / 2003

Genetic diversity and rapid propagation of two important indigenous fruit trees in Malawi
Partner: Norwegian University of Life Sciences

PRO MA 70 / 2003

The institutional context of the 2004 general elections in Malawi – A framework for research collaboration between the Centre for Social Research (CSR) at Chancellor College, Zomba and CMI, Bergen
Partner: Chr. Michelsen Institute

PRO MA 71 / 2003

Lungwena health, nutrition and agricultural multidisciplinary project – Towards poverty reduction
Partner: University of Oslo

Mali

National Centre for Scientific and Technological Research

PRO 22 / 2002

Medicinal plants in Mali: Ethnobotany, phytochemistry and biological activity
Partner: University of Oslo

University of Bamako

PRO 25 / 2002

Research concerning the integration of national languages into the educational system in Mali
Partner: University of Oslo

Mozambique

Eduardo Mondlane University

PRO 06 / 2002

Competence building in research, teaching and application of mathematics and informatics in Mozambique
Partner: Norwegian University of Life Sciences

PRO 19 / 2002

Health Information System Programme (HISP) – A network programme for empowerment of the marginalised in the globalising world – Inclusion of the excluded
Partner: University of Oslo
Network cooperation

PRO 57 / 2003

Solar energy in Mozambique, general studies and development of concentrating systems
Partner: Norwegian University of Science and Technology

South Africa

University of Kwazulu-Natal

PRO 12 / 2002

Nature conservation and management: Biodiversity in coastal Maputaland (northern KwaZulu-Natal and southern part of Mozambique): Links between geology and ecology

Partner: Norwegian University of Life Sciences

PRO SA 49 / 2002

Renewable energy resources and their development

Partner: Norwegian University of Science and Technology

University of Limpopo

PRO SA 48 / 2002

Research and training in southern Africa for the development and evaluation of new childhood vaccines

Partner: University of Bergen

PRO 40 / 2002

The psychology co-operation programme UoO/UNIN

Partner: University of Oslo
Network cooperation

University of Pretoria

PRO 02 / 2002

Productive learning cultures

Partner: University of Bergen
Network cooperation

University of the Western Cape

PRO 11 / 2002

Graduate studies in science, mathematics and technology education – GRASSMATE

Partner: University of Bergen
Network cooperation

Tanzania

Muhimbili University College of Health Sciences

PRO 60 / 2003

Occupational respiratory diseases among male and female workers in dusty industries in Tanzania

Partner: University of Bergen

Sokoine University of Agriculture

PRO 10 / 2002

The Wildlife Management BSc Programme at Sokoine University: Consolidation through institutional capacity

Partner: Norwegian Institute of Nature Research – NINA

University of Dar-es-Salaam

PRO 15 / 2002

UiB/UDSM counselling, education and health promotion: A research and competence building programme

Partner: University of Bergen

PRO 17 / 2002

Health systems research and health promotion in relation to reproductive health in Tanzania

Partner: University of Bergen
Network cooperation

PRO 27 / 2002

Gender, generation and communication in times of AIDS: The potential of 'modern' and 'traditional' institutions

Partner: University of Bergen
Network cooperation

PRO 41 / 2002

The language of instruction in South Africa and Tanzania – A research cooperation with a training component (LOITASA)

Partner: University of Oslo
Network cooperation

PRO 61 / 2003

Postgraduate program for water management at University of Dar es Salaam

Partner: Norwegian University of Science and Technology

PRO 62 / 2003

Country-wide time use by gender and advanced analysis of census data

Partner: University of Tromsø

Uganda

Makerere University

PRO 05 / 2002

SEARCH – Southern & Eastern Africa

Research Co-operation for Habitat

Partner: The Oslo School of Architecture and Design

Network cooperation

PRO 07 / 2002

Africanization of biblical studies in three Eastern African research institutions

Partner: School of Mission and Theology

Network cooperation

PRO 08 / 2002

Collaborative research in environmental toxicology and zoonotic diseases: A South-North veterinary network

Partner: Norwegian School of Veterinary Science

Network cooperation

PRO 13 / 2002

The use of medicinal plants in primary health care in Uganda

Partner: Norwegian University of Life Sciences

PRO 26 / 2002

Ph.D. research cooperation between Faculty of Technology at Makerere University and NTNU

Partner: Norwegian University of Science and Technology

PRO 33 / 2002

Research in basic sciences at Makerere and collaborating universities to promote technological development

Partner: University of Bergen

PRO 43 / 2002

Essential nutrition and child health in Uganda: A research project to promote innovative community-based and clinical actions

Partner: University of Bergen

PRO 63 / 2003

Biodiversity and plant-animal interactions in Uganda

Partner: Norwegian University of Life Sciences

PRO 64 / 2003

Research and training network in pathology

Partner: University of Bergen

Zambia

University of Zambia

PRO 23 / 2002

Strengthening HIV-related interventions in Zambia: Cooperation in research and institution capacity building

Partner: University of Bergen

Zimbabwe

University of Zimbabwe

PRO 01 / 2002

The ancestral landscape of Manyikaland, Zimbabwe – A co-operation project in archaeology between University of Zimbabwe and University of Bergen

Partner: University of Bergen

PRO 18 / 2002

African languages lexical project (ALLEX)

Partner: University of Oslo

PRO 38 / 2002

Economic modelling, publication, and teaching of methodology development

Partner: University of Oslo

PRO 39 / 2002

Biodiversity of Southern Africa
(Monocotyledonous plants) – Taxonomy,
conservation and use
Partner: University of Oslo
Network cooperation

PRO 42 / 2002

Urogenital occurrence and persistence
of group B streptococcal colonisation in
pregnancy and pregnancy outcome in
Zimbabwe
Partner: Norwegian University of Science and
Technology

PRO 47 / 2002

Mineral resources engineering –
Detoxification of residual mining chemicals
Partner: Norwegian University of Science and
Technology

PRO X2 66 / 2003

A Southern African postgraduate training
programme in mathematical modelling
Partner: University of Oslo
Network cooperation

Asia

Bangladesh

University of Dhaka

PRO 52 / 2003

Assessment of microbial pollution, diversity
and community structure in freshwater
resources in Bangladesh using molecular
techniques
Partner: University of Bergen

Nepal

Tribhuvan University

PRO 04 / 2002

Local effects of large-scale global changes: A
case study in the Himalayas, Nepal
Partner: University of Bergen

PRO 28 / 2002

Post graduate research collaboration at IOE,
Tribhuvan University and NTNU
Partner: Norwegian University of Science and
Technology

PRO 36 / 2002

Program to improve child health and nutrition
in South Asia
Partner: University of Bergen

PRO 58 / 2003

Education, research and training for
sustainable management of natural resources
in watersheds of Nepal
Partner: Norwegian University of Life
Sciences

Sri Lanka

University of Colombo

PRO 14 / 2002

Ethical issues in health policy in Sri Lanka
Partner: University of Bergen
Network cooperation

Vietnam

National Institute of Animal Husbandry

PRO 09 / 2002

Improved utilization of agricultural
by-products for animal feed in Vietnam and
Laos
Partner: Norwegian University of Life
Sciences

Research Institute for Aquaculture No. 3

PRO 65 / 2003

Aquaculture and coastal management
in Vietnam – Environmental capacity,
biodiversity and fish health in culturing
systems
Partner: University of Bergen

University of Fisheries

PRO 37 / 2002

Marine aquaculture in Vietnam
Partner: Norwegian University of Science and
Technology

Latin America

Guatemala

University of San Carlos

PRO 45 / 2002

Maya competence building II: Identities,
inter-culturality and the multiethnic state of
Guatemala
Partner: University of Tromsø

Nicaragua

University of the Autonomous Regions of the Caribbean Coast of Nicaragua

PRO 59 / 2003

Cultural revitalization, environment and
sustainable productive systems of indigenous
peoples in the Caribbean coast of Nicaragua
Partner: University of Tromsø

Palestinian areas

Al-Quds University

PRO PA 72 / 2004

Child research in Palestine
Partner: NOVA – Norwegian Social Research

Birzeit University

PRO 03 / 2002

Lower Jordan River Basin Project
Partner: University of Bergen

PRO PA 67 / 2003

Basic history of Palestine/The Holy Land
Partner: University of Bergen

PRO PA 68 / 2004

Capacity building and regional cooperation
in the field of landscape architecture and
planning
Partner: Norwegian University of Life
Sciences

University of Hebron

PRO X1 50 / 2002

Building competence in epidemiology in
Palestine – Taking over and maintain phase
Partner: University of Oslo
Network cooperation

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