

Swedish Support to University of Eduardo Mondlane in Mozambique

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Sida Evaluation 98/38

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1 Acknowledgements and Organisation of Work

The evaluation team was made up of the following members: Dr David Wield, Director, Centre for Technology Strategy and Co-Chair, Development Studies, Open University, UK (team leader); Dr Admir Bay, Managing Director, Semoc (Mozambique Seed Company) Maputo, Mozambique; Dr Silas E Gustafsson, Head, President's Office, University of Gothenburg, Sweden; and Professor Penina Mlama, Chief Academic Officer, University of Dar Es Salaam, Tanzania. The terms of reference of the external evaluation are given in Annex A. Its structure guides the structure of this report.

On March 6th and 7th three members of the evaluation team visited representatives from relevant departments at Sida (SAREC, DESO/UND and NATUR) to receive briefing on Sida support. Between those dates and April 11th one team member, Dr. Gustafsson, contacted eight of the Swedish collaborating partners. Dr Admir Bay began work in the period 20th - 28th March, with a series of 15 interviews with Mozambican researchers and UEM staff. The whole team was engaged in intensive work at UEM between 14th April and 2nd May. Annex B details those met at the various stages of the evaluation.

The team presented its preliminary findings at a meeting with UEM on 28th April, those present being Professors Mazula and Saraiva, Engineer Massingue and Drs Lopes and Manjate from UEM, Drs Carlsson and Lindroos from Sida-Stockholm, and Professor Mlama and Drs Bay and Wield from the evaluation team. It also presented preliminary findings on the 29th April at the Swedish Embassy where those present were Ann Stodberg, Claes Kjellstrom and Anne Pedersen from the Embassy, Drs Carlsson and Lindroos from Sida-Stockholm, and Professor Mlama and Drs Bay and Wield from the evaluation team. Finally, thanks to Deirdre Hancock, Julie Mortimer and Louise Platt from the Open University for their support.

The evaluation team is grateful both to UEM and to Sida for their support. Lourenco Dique deserves a special mention for his programme organization and flexibility. In Maputo a very large group of people gave generously of their time. Much documentation was available for the start of the Mozambique visits and more was always made available on request (See Annex C). From Sida also, we received immediate attention for each of our requests.

2 Executive Summary

- 1 The purpose of this evaluation is to report comprehensively on the different forms of Sida support to Eduardo Mondlane University during the period 1992-1996, focusing on the effects and results of Swedish support in bringing about change in response to the university strategy plan Present and Perspectives. The evaluation team studied how UEM and Sida might better organise their activities for more efficient collaboration regarding support for research, research training and institutional development of UEM. The evaluation team was asked to discuss how to build more comprehensive Swedish support in the new Sida from 1st January 1998. We focus particularly on the three year period 1998-2000 and support the proposal of a single co-ordinated agreement between Sida and UEM for three years starting 1st January 1998 (Annex A).
- 2 The evaluation covered: (i) Sida-SAREC research support, contacting Swedish and Mozambican partners, and those involved in UEM's institutional development in research, research training and research management; (ii) Sida core funding to contribute to university transformation; and (iii) the bilateral co-operation to strengthen agronomy teaching and research. We found a small fourth type of support, from Sida's INEC (ex-SWEDCORP) towards extension activities in one Centre (the Centre for Industrial Engineering Safety and Environment) which was undergoing a separate evaluation concurrently with ours (Section 3.2).
- 3 Two forms of support, the Sida-SAREC research support and core support, have had a considerable impact in UEM, both in terms of their overall results, and in terms of their impact on institutional development processes (Sections 5 and 8). Two further and more recent forms of support - for departmental strengthening in agronomy and for industrial extension, have had less impact as yet (Sections 7 and 5.4). There is a strong case for continued support, to continue the development of research capabilities and institutional development at UEM and significant scope for gradually increasing support in an evolutionary way as UEM moves to implement its mid-term and longer-term strategic plans from 1998. Overall, our recommendation is for continued and incrementally increasing support, based on UEM's own strategic plans, increases in specific areas being triggered by the university's detailed plans. We do not recommend radical changes to Swedish support unless the UEM's new strategic plan marks major changes to university strategy. Initial signs are that the strategic plan will be evolutionary.

Research capacity building

- 4 Our overall impression of Sida-SAREC research capacity building support is positive. The development of research capacity at UEM has been significant, albeit from an extremely weak base regarding staff development, equipment, administrative and financial support. It has, through a mixture of project, programme and sandwich training support, its support for team-building initiatives and interdisciplinary research, its mix of support to beginner projects, masters and doctoral research training programmes, and qualified (post-doctoral) research, and support for information, databases and equipment research infrastructure, had a major impact on UEM research capacity. The fact that the management of funds has been in UEM, that projects and programmes need to be presented within faculty and university perspectives, has also led to research being quite well integrated into the institutional development of UEM. The support is seen within the university as having provided a general model for research development and management (Section 5).
- 5 There is now a need to build on these achievements, which are still fragile but with significant future potential. The university is keen to continue research training systems with an institutional development component, and in following-up the partnership links built-up over

the years with Swedish and other universities. The key issue is how to increase the impact on institutional development (section 5).

- 6 The sandwich model, which has been developed as a key form of Sida-SAREC support over the last decade or so, is a powerful means of building local research capacity at the same time as training Mozambicans in research using a variety of mechanisms, partnership types, multinational supervisory systems, and so on. It is relatively flexible regarding the sources of expertise of collaboration, the numbers of Mozambicans linked to each project, linkages with other local institutions, and regional links. We believe this model can be further strengthened over the next period. In particular, we think that, as Mozambicans return with doctorates and wish to begin post-doctoral research they can act as leaders of clusters of related researchers, undertaking PhDs, masters and licenciatura projects (Section 5.2).
- 7 The next two to three years is likely to bring the beginnings of localisation of masters and postgraduate diploma programmes, and rather more local participation in doctoral project supervision. We believe the development of small clusters of researchers is one pre-requisite for postgraduate training to begin. The research clusters could be given research support as they join with the development of postgraduate programmes and doctoral supervision (5.3).
- 8 Such a development gives a major role to staff returning with PhDs. Their retention within the university and as researchers is obviously an essential condition for growth of research capacity. Conversely, if the university is unable to secure the full-time involvement of these staff in higher level academic activity, its strategic planning will not deliver the expected results. Special research support might be needed to encourage these staff to develop good quality research proposals that involve more junior staff members. Small Open Funds would be one way to encourage such an approach. But much more is needed, in terms of delivering the basic needs of staff and regulating their obligations following expensive training. UEM has proposed new salary and incentive systems for staff which will encourage those who are involved in research and licenciatura diploma supervision. We urge that such an approach is extended to postgraduate teaching and supervision, joint supervision of Masters and Doctoral research projects, and research publication in international journals.
- 9 At the moment, there are few senior Mozambican staff members (and rather few senior expatriate staff). In 1995/96 there were just six Associate Professors and no Full Professors. UEM has clear regulations for academic career progression but some further support and encouragement for senior staff progression may be required. Support and encouragement usually includes guidelines on expectations in terms of publications, research and teaching initiatives, external recognition, and so on. UEM could build up a series of guidelines rather quickly.
- 10 UEM is considering requesting the government for a separate budget for research. At the moment there are no pigeon-holed funds for research within the government grant. The university is also considering establishing its own Open Fund for research, with associated decision-making and academic monitoring procedures. Such a decision is to be applauded and supported, since it will mark an advance in the institutionalisation of research capacity in the university. Sida-SAREC has provided small Open Fund support in the past, with slow but rather positive results. We believe there is a case for small Open Funds to be provided, at faculty and university level. In faculties, there is a case for Sida support at university level, and in those faculties with successful Sida supported research. Such Open Funds can be used to set up appropriate academic monitoring systems and thus build research management capacity (Section 5.6).
- 11 There is also the possibility of an expanded role for Swedish partners. At the moment most partners take a good interest in their Mozambican projects. Swedish partners could play an important advisory role in academic monitoring. Senior Visiting Professors might assist in the review of programmes, contribute seminars, assist with short teaching spells as postgraduate programmes begin, and act as external examiners on post-graduate and doctoral programmes.

- 12 There has been some education and training of technical and administrative staff that will assist research capacity building. Examples are technician training, librarian training, and postgraduate training in educational management. However, this has not received the same attention as academic staff training. The university has emphasised the need to prioritise improvement of administration and management in its new strategic plan. Some draft documents are already being produced, including one on how to better integrate financial management systems between the central finance directorate and the faculties. At university level, we believe there is a strong case for support of UEM's plans, particularly as they affect the improvement of research management, and the strengthening of financial management (Section 5.7).
- 13 The generic research labs established by the Science Faculty are a possible model for other faculties to follow. Such generic research labs could then be extended as postgraduate programmes are set up (Section 4.3).
- 14 Faculty-level capacity to manage research administration is still very weak in most cases. There is a need to develop procurement capabilities, budgetary and financial control systems, as well as laboratory systems. The faculties need to develop the means to pay for smaller items, keep accounts that can be properly checked and audited at the centre and by independent auditors, and to control procurement systems. Financial management needs to be made more sensitive to research needs. There is a strong case for a two-level approach, where the central units of the university take responsibility for overall financial accounts and for controlling the independent audit, whilst faculties take responsibility for the implementation and day-to-day control of research budgets (Section 5.7).
- 15 Overall, for most of these recommendations to be implemented requires that the university establishes a Research Committee to take overall responsibility for research. If the various research support funds are to be used to best advantage, whether from government, or from the various agencies (NORAD, IDRC, Ford, Rockefeller, EC, as well as Sida) there is a need for a clear system that facilitates rather than constrains research (Section 6.1).
- 16 At the moment, there is no science and technology policy body in Mozambique and no government ministry has clear responsibility for science and technology. There are some signs that a national science and technology R&D co-ordination body is emerging. A positive aspect is that it is an elected representative body with an executive from the national research institutes, including the university. There may be a case for some limited support as this body emerges, perhaps focused on developing ground-up and practical research co-ordination and training (Section 6.2).

Core Support

- 17 The Sida core funding also, has made a key contribution to university programmes prioritised in the university strategy document *Present and Perspectives*. The support was made available in response to UEM's encouragement of donors to support UEM's core programmes of transformation. The core support has been extremely instrumental in giving some flexibility to the university in meeting its basic goals. Its use has been balanced between support for student scholarship and nutritional support, faculty consumables and undergraduate library book needs, internet and staff training. Core funds are distributed at central and faculty levels, research funds at faculty, department and project levels and decision-making systems have had to be developed for such distribution, that do not contradict distribution of government funds by faculty. The associated learning processes can be built if more core funding can be obtained (Section 8). We recommend that the core funding is continued, and used according to criteria set by the university from its strategic plan. The present conditions should continue, namely that there are no conditions on use of core funds, other than that expenditure fits within the university strategic plan, that its use is reported in annual reports, and that independent audit is properly undertaken. During the three year period 1998-2000, as the university begins to

- implement its new strategic plan, it is important that core funds are used flexibly to accommodate any changed emphasis in university plans.
- 18 The overall financial situation at the university has deteriorated significantly in recent years as the effects of economic reforms impact on education. The salaries of Mozambican academics are now reduced to the level of 1990, and of other staff are even worse. A salary rise of almost three times would only put staff back to the situation after the rises in 1991. Staff retention problems are increasing, especially of qualified staff (Section 3.1).
 - 19 The overall sustainability of UEM depends on increasing the proportion of core flexible funding within the institution. Thus far, UEM has tried hard, but has been unable to persuade other funders of this self-evident fact (Section 8.4). There are some indications that a few funders may be changing their conditions a little. How can the university convince funders, including government, to change the support regime? This issue cannot be resolved just by the university - the funders also must re-assess why they are supporting the university. We make the following suggestions:
 - (i) we would value the university's consideration on whether there may be a case for a university representative body to oversee decision-making on use of core funds, from whatever source. This would need to be a major committee, say a Finance and Strategy Committee, with top-level representation;
 - (ii) we would also value the university's consideration of whether co-ordinators may be needed, say along the lines of the Scientific Director's role for Sida-SAREC research support, as a way of co-ordinating without creating new structures.
 - (iii) we wonder whether the establishment of Open Funds for certain areas might lever more flexible funding in those areas. Examples might be a Research Open Fund, an Open Fund for strengthening management and administration within UEM; an Open Fund for computerising the university, including library and information systems development.
 - 20 The Present and Perspectives strategic document has been in place since 1992. A thorough review of what it has achieved would be a major input to the discussions on the future Strategic Plan of the university.
 - 21 UEM has made proposals to government for a new salary structure which would bring material incentives to academics who are committed to teaching, research and work at the university. It would increase the financial autonomy of the university, allowing increased material incentives for administrative staff. Other proposals and ideas include calls for government to support research, and for increases in interface extension activities that assist government and private sector activities in Mozambique and increased income for the university. The government has, thus far, not accepted the proposals but appears generally supportive. Government seems to want clear plans from the university about how it will increase its sustainability. Such plans may well involve joint UEM-government-donor action. (Section 9.3)
 - 22 The university has prioritised the improvement of administrative and management for its new strategic plan. Core support is needed for this task, including training and appreciation of systems elsewhere. Sida might focus its support for administration and management support on research and financial management systems, to include technician training and library information systems courses. More generally, the 'rethinking the university' process taking place towards the new strategic plan might itself require some core support, as the university attempts to position itself as a public institution in the new situation in Mozambique (Section 9.3).
 - 23 The Sida core funding support fulfils a vital need but can only fill a small part of UEM's basic needs if the institution is to become sustainable. UEM seems satisfied with the model of core funding and the associated university decision-making structures and would like to extend it to

other donors (Section 8). It sees this type of support as a model for future co-operation. We recommend that core support continues, and that its flexibility allows for changes in its use between 1998 and 2000 as the new university strategic plan begins to be implemented. One possibility would be to gradually increase core funding in function of one or two new activities that may be required after 1998. Obvious candidates might be postgraduate education, Open Funds, strengthening administration and management, and library information systems.

Teaching and research strengthening in Agronomy

- 24 Of the large number of departmental strengthening programmes at UEM, Sida supports two, in agricultural economics and agricultural engineering. Although they were established before the integration of SAREC and Sida, these projects, to support teaching, staff development, research and extension, are rather new and therefore difficult to evaluate. They have had an unhappy period for various reasons, some unconnected to the UEM or the Swedish partner. We believe there is something to learn from the long-running UEM-SAREC relationship, which has been quite flexible, grows steadily based on the capacity of the local researchers, sandwich training, and so forth. Recruitment of expatriate staff from the region should be considered. It is important that the programme fills the needs of the university, given the importance of agronomy within national priorities (Section 7).
- 25 The departmental strengthening programmes in Agricultural Economics and Agricultural Engineering represent an opportunity to establish a significant sandwich training programme in conjunction with partners. Each department might think in terms of the development of a cluster of Mozambican research-active staff. Thus four to six Mozambicans per department need to be contracted by the UEM over the next two to three years (Section 7).

Extension activities

- 26 The existence of Sida INEC support to extension activities in health and occupational safety suggested that there may be a role for Sida in the development of interface and extension activities, which are likely to become a key part of the new university strategic plan. The university is thinking about how its extension activities can develop in the public interest, and how they can assist in building collectively-run services that counter the present trend to fragmented individual consultancy. It is important and urgent that there is a clear policy on consultancy and extension activities, which gives incentives to units to expand. Sida-INEC has taken the initiative to begin support to extension within the university, by supporting one centre. We recommend that Sida study whether there is a case for more general support of university/industry activities.

Other key issues

- 27 UEM has implemented a number of policies over the years which act to improve the situation of women (Section 3.1). Because women intakes are only at 25%, further action is required from the university and elsewhere to increase the proportion of women finishing school and eligible to join the university. At the moment the university operates with some gender-based policies. Given that the improvement of women's education is so important to national development, we suggest that gender issues need to be addressed explicitly and formally as a mainstream topic in the university's present strategic planning exercise, if they are not already.
- 28 The Historical Archive is a national collection and there is a case for a joint approach from the Archive and the UEM to government and donors for support to cover its special needs as a national archive. The need for a building to house the collections before they deteriorate is acute, and the approach to the European Union might be able to be supported by a range of European partners of UEM so that it becomes a priority for funding (Section 5.5).
- 29 We recommend that Sida consider supporting the computerisation of the library system. The university's library and information systems need upgrading and UEM is developing a plan for

an integrated system. At the moment there are much less than minimal CD-Rom facilities and very weak database access facilities. The university appears to be flexibly planning for systems that can be gradually upgraded as resources allow. Given the 'revolution' in database access that is taking place, there is an urgent need for support to begin improvement of UEM's systems (Section 5.5).

- 30 The university is prioritising the development of distance education, as a means of extending higher education to the north and centre of the country. In practice, UEM acts as the National University within Mozambique and distance education presents an opportunity, and a challenge, to extend its effectiveness nationally, and to develop the national higher education system. Support may be required to develop quality and academic monitoring systems for distance education that are also essential for UEM's headquarters' education (Section 9).
- 31 Sida support to UEM has grown gradually over the years. It has been used to support a range of activities, with some significant foci, particularly research support and core funding support. The support has assisted the development of university decision-making processes. Our recommendations to UEM focus around improvement of decision-making and management processes as it moves to convince government and society that it can increasingly deliver the services demanded of it in the public interest, and do so with moves towards sustainability. Our recommendations to Sida focus on the possibilities within the next three years for evolutionary, quite flexible, and perhaps some increases in support that will put the university in position to increase its activities and the quality of its staff, teaching and research, all within the management control of UEM itself, requiring support for the learning processes that go with transformation.

3 Background

3.1 UEM

Universidade Eduardo Mondlane, Mozambique's major higher education institution, began in 1962 as an integral part of the Portuguese university system. Mozambique was constituted as an overseas 'Province' of Portugal until the overthrow of the Portuguese dictatorship in 1974 and Mozambican independence in 1975. The early years of independence were characterised by a dramatic fall in student numbers (from over 3,000 in 1973 to 1,281 in 1976) as most children of Portuguese settlers left with their parents. The colonial education system had been very rudimentary, with literacy rates below 15% by independence. Total secondary school enrolment, including of settler children, totalled just 33,000 by 1974. Only a small number of non-settler children had been slowly integrated into secondary education in the late colonial period, with the result that there were very few Mozambican secondary school pupils qualified to enter the university after independence. Output of graduates a decade after independence had risen to just 121. The first years after independence brought some significant changes to the university. A pre-university year was begun to improve access of students from around the country, and all final school year students brought to the university. There was a temporary move to three year bachelor's courses, except for Medicine, Agronomy and Veterinary, and recruitment drives brought expatriate teachers from around the world. The growth of expatriate staff from 154 to 191 in the first years after independence involved a turn-around from a primarily Portuguese to an internationally diverse academic staff.

Student numbers remained low in the early 1980s, and the university responded by closing non-priority courses, putting emphasis on the education of school teachers, making efforts to improve and update curricula, and making a major effort to recruit Mozambican staff. From 1985, numbers began to increase a little more rapidly, allowing the reopening of courses, mostly as five-year licenciatura, by the end of the 1980s. But these positive developments took place against the general backdrop of increasing de stabilisation and war, and the dramatically lowered state financial support for education as the economic reform bit into national budgets and the real value of salaries.

The University had by 1996/97 20 five year 'licenciatura' (bachelor's degrees with six month dissertation) programmes, a seven year licenciatura programme in medicine, and a new bachelor's programme in the social sciences (see Table 3.1). With 5,500 students in 1996/97, an increase from 3,500 in 1992/93, and 512 full-time (380 Mozambican and 132 expatriate) and 177 part-time (172 Mozambican) staff in 1995/96 (Table 3.2), it completely dominates educational provision in Mozambique.

The university is organized with two major bodies (The University Council and the Academic Council) and three senior officers, The Rector and two Vice-Rectors. The Rector takes overall responsibility for the running of the university and reports to the University Council, made up of half university and half external members. The Rector takes direct responsibility for the Planning and Public Relations Directorates, and overall responsibility for academic units. The Vice-Rector (Administration and Resources), vacant for three years until earlier this year, takes responsibility for the Directions of Administration, Installations, Human Resources, Finance and Social (student) Services. The Vice-Rector (Academic) is responsible for the Directorates of Teaching, Research and Extension, Registry and Library. The central directions meet regularly as the Council of the Rectory.

The second most important committee, after the University Council, is the Academic Council, with twenty elected members from various parts of the university, together with the three senior officers. It is consulted on all major academic issues. Other committees such as a Research Committee (Conselho Científico), are planned in the near future.

The day-to-day running of the university is assisted by a monthly meeting of all the Deans and Directors, together with the three senior officers. This body is called the Council of Directors.

Each faculty now has a working management system with a Director, two Deputy Directors (for teaching and research and extension), Heads of Department, and the faculty Head of Administration.

Table 3.1 Courses at the UEM 1996/97

FACULTY	COURSE
Agronomy and Forestry Engineering	1. Agricultural Engineering
	2. Forestry Engineering
Architecture and Physical Planning	Architecture Physical Planning
Science	1. Biology
	2. Physics
	3. Geology
	4. Computer Science & Informatics
	5. Chemistry
Law	Law
Economics	1. Economics
	2. Management
Engineering	1. Civil Engineering
	2. Electrical Engineering: weak current
	3. Electrical Engineering: strong current
	4. Mechanical Engineering
	5. Chemical Engineering
Arts	1. Geography
	2. History
	3. Linguistics
Medicine	Medicine
Veterinary Science	Veterinary Science
UFICS	Social Science

Table 3.2 Staff and Student numbers at Eduardo Mondlane University, 1975-1996

	1975	1980	1990	1993/94	1995/96	1996/97
Students	2,433	1,016	2,884	4,036	5,200	5,762
Academic Staff:						
Mozambican FT	5	138	308	351	380	392
Expatriate FT	154	185	149	147	132	120
Mozambican PT	na	na	94	172	172	193
Expatriate PT	na	na		7	5	6
Total Academic			551	677	689	711
Technical/ Adm. staff.	na	na	1,272	1,443	1,474	1,518
Graduates	116	113	85	124	169	266

Note: Student numbers include only tertiary level students. After independence and until the late 1980s, significant numbers of pre-university students were enrolled, for example, 706 in 1980.

UEM is organised academically into nine faculties (Arts, Economics, Architecture, Science, Engineering, Law, Medicine, Veterinary, and Agronomy) with an embryonic Faculty of Social Sciences, the University Social Science Training and Research Unit (UFICS). Student numbers have risen rapidly in recent years, doubling since 1992. During the 1995/96 academic year the UEM teaching staff numbered 689, of which 512 were full time, 380 Mozambican. UEM dominates higher education in Mozambique, though there are two other public higher education institutions (The Pedagogic University and the International Relations Higher Education Institute-ISRI), and three new private institutions which have been established in recent years (the Catholic University, the Higher Education Institute for Science and Technology of Mozambique - ISCTEM, and the Higher Polytechnic University - ISPU). The UEM, ISRI, ISCTEM and ISPU are based only in Maputo but the others have headquarters or units in Beira and Nampula, in the centre and north of the country. The fees for the private institutes are around \$250 per month compared to \$100 per year in UEM.

The administrative structure of UEM has been streamlined in recent years (Table 3.3). There are eleven administrative directorates. In addition to the nine faculties and one academic unit for Social Sciences, there are ten Centres, some research based, like the Centre of African Studies. Others, like the Electronics Centre and the Informatics Centre, provide services to both the university and outside. There are also two museums and the national Historical Archive.

In 1995/96 graduation rates increased somewhat (Table 3.4). 220 students graduated in the normal way. In the last two years, women graduation rates have been significantly higher than men. 40% of graduates have been women between 1994 and 1996, compared to the female intake of 25%. The time taken to graduate fell last year from 7.5 years to 6.5 years, a welcome improvement. Another 117 students graduated through a special government dispensation for students in Law and Economics who, over the last few years, had been unable to complete their licenciatura degree dissertation, often because of lack of staff to supervise. The success rate of those graduating from the relevant intake is still very low at 29.9%.

The multi-site university has good areas of land and 90,000 square metres of buildings, many of which are more than 30 years old and in need of rehabilitation. Since 1990 a reasonable amount of rehabilitation and some new building has begun. The World Bank financed Capacity Building projects has rehabilitated apartment blocks for 108 staff units, and will complete a further 92 new houses for staff by 1998. A total of \$34.2 million is estimated as the cost of the capacity building project. A rehabilitation of student halls of residence is also underway, to go with the new 'colmeia' hall of residence with 384 places, partially funded by Sida. In 1995 a new phase 1 building for the Science faculty was begun that is due for completion in early 1998. The University Press has been rehabilitated and a new bookshop will begin in August 1997.

Analysing the financial situation in UEM is complicated by the existence of multiple-funding systems. First, the government budget, through the Planning and Finance Ministry; second, income from students and extension activities; third, donor funds and credits made available and managed directly by the university; fourth, donor funds where the university is informed of the level of funding but has no direct management responsibility; and fifth, donor funds where the university has no knowledge of the level of funding.

Table 3.3 University Management Structure

Rector	Vice-Rector Academic	Vice-Rector (Administrative)	Faculties	Centres	Archives and Museums
Rector's Office	Documentation Services Directorate (Libraries)	University Installations Directorate	Faculty of Agronomy and Forestry Engineering	Centre of African Studies (CEA)	Historical Archive of Mozambique
Planning Directorate	Academic Registry	Human Resources Directorate	Faculty of Architecture and Physical Planning	Electronics and Instrumentation Centre (CEI)	Natural History Museum
Public Relations Directorate	Pedagogic Directorate	Finance Directorate	Faculty of Science	Computer Centre (CIUEM)	National Currency Museum
	Scientific Directorate (Research and Academic Staff Development)	Assets and Material Resources Directorate	Faculty of Law	Centre for Habitat Studies and Development (Faculty of Architecture and Physical Planning)	
		Social Services Directorate	Faculty of Economics	Centre for Engineering Studies (UP) (Faculty of Engineering)	
		University Press	Faculty of Engineering	Centre for Studies of Population (Faculty of Arts)	
			Faculty of Arts		
			Faculty of Medicine		
			Faculty of Veterinary Science		
			UFICS		

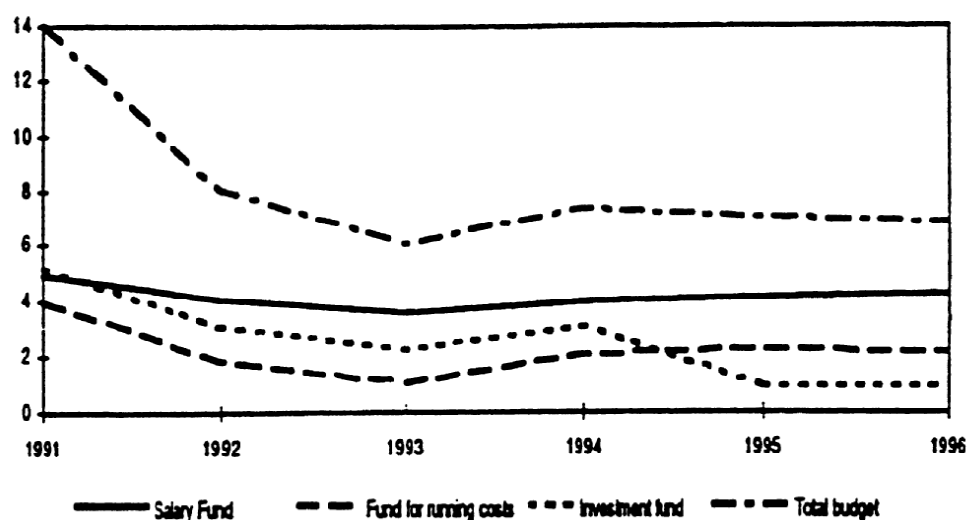
Table 3.4 UEM Graduates (1994/95 and 1995/96)

FACULTY	COURSE	1994/95	1995/96	DISPENSED
Agronomy	Forestry Engineering	10	2	
	Agricultural Engineering	9	10	
Agronomy Subtotal		19	12	
Architecture	Arch. & Phys.Planning	11	14	
Science	Biology	34	21	
	Physics	3	10	
	Geology	4	9	
	Computer Science	9	12	
	Chemistry	2	4	
Science Subtotal		52	56	
Law	Law	8	38	13
Economics	Economics	2	3	47
	Management	0	4	57
Economics subtotal		2	7	104
Engineering	Civil Engineering	3	9	
	Civil Engineering	3	9	
	Electrical Engineering	5	7	
	Mech. Engineering	7	6	
	Chemical Engineering	2	3	
Engineering Subtotal		17	25	
Arts	Geography	5	5	
	History	10	6	
	Linguistics	10	12	
Arts Subtotal		25	23	
Medicine	Medicine	27	32	
Veterinary Science	Veterinary Science	8	13	
TOTAL		169	220	117

Source: UEM Annual Report 1995/96

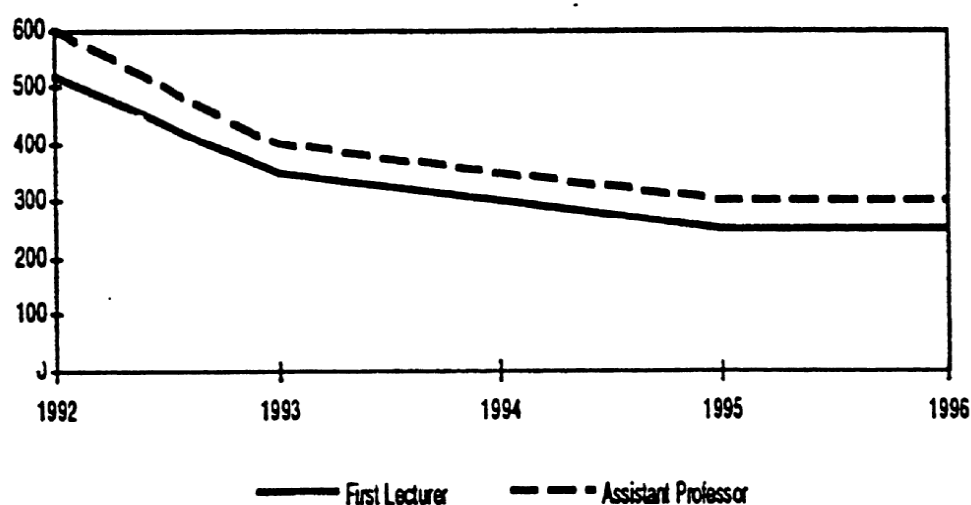
Although government funds have held up fairly well considering the financial situation of the country, they are not keeping pace with the growth and needs of the institution, showing relative decline in real terms. Salary costs are paid in full but the real value of wages has been in decline. The recurrent costs, which include student scholarships, utility costs and general running costs of teaching, are very much less than necessary for the proper functioning of the institution. Figures 3.1 and 3.2 give an idea of the drop in real value of government funding since 1991, and the real value of salaries.

Figure 3.1 Evolution of government budget to UEM 1991 - 1996 (in US dollars)



Source: UEM Annual Report 1995/96

Figure 3.2 Evolution of academic staff wages (in US dollars)



Source: UEM Annual Report 1995/96

Alongside the government budget, significant resource has been available from donors. The university estimates that around 75% of its resource in recent years has come from donors. Estimating this resource has become more difficult recently since Annual Reports do not list it as before. In 1991 it was possible to see the estimated value of each type of donor support (see Table 3.5, taken from table 3.2 from Wield 1995, and updated for 1995/96). Later it was listed by donor for some donors, and by number of technical assistance personnel for others (Annual Financial Report 1993). Most recently, this data has deteriorated. In 1995/96 the government support totalled 72 million contos (\$6.59 million), compared with 28 million contos (\$7.53 million) in 1992. Table 3.6 gives a break down of this funding by wage bill, other recurrent expenditure and investment grant.

This illustrates that government funding has held up rather well in the difficult circumstances prevailing in Mozambique, but has not risen in line with staff and student increases and infrastructural needs. Table 3.7 gives an estimate of the overall financial situation of UEM.

Table 3.5 Donor support to UEM 1991 in US\$m

	1991
British Council	.36
Commonwealth Fund	.86
Cuba	.68
GDR	.79
Italy	1.96
Netherlands	4.30
NORAD	.50
SAREC	1.80
SIDA	.82
UNDP	.37
USSR	4.33
World Bank	4.73
Others	2.15
TOTAL	23.63

Source: Annual Report, 1991-2

Table 3.6 Government Support to UEM 1992-96

	Wages		Running Costs		Investment		Total	
	m.contos	US\$m	m.contos	US\$m	m.contos	US\$m	m.contos	US\$m
1992	8.46	2.84	3.37	1.44	7.02	2.36	18.84	6.64
1993	15.05	2.77	5.55	1.02	8.71	1.61	28.31	5.40
1994	23.31	3.38	10.41	1.58	15.14	2.36	48.86	7.31
1995	36.90	3.35	18.31	1.66	8.32	0.76	63.53	5.78
1996	78.22	6.83			9.94	0.87	88.16	7.70

Table 3.7 UEM Budget 1980-96 (million Metical (MT)/million \$US)

	1980	1985	1990	1992	1996
Recurrent GOM (mMt)	228	310	3,863	15,527	78,216
Recurrent external (mMT)	n/a	n/a	10,010	14,855	na
Investment GOM (mMT)	28	8	3,335	7,884	9,944
Investment external (mMT)	n/a	n/a	3,358	27,172	na
Total (mMT)	246	318	21,566	63,520	na
Total (\$USm)	8.0	9.4	28.2	37.5	na
Exchange rate (MT/\$US)	32.04	43.18	729.3	2,550	na

In the early 1990s the university began a process of rehabilitation and growth. The economic reform process had led to massive reduction in the real value of salaries and resources for recurrent expenditures. The buildings, which dated in the main from the early 1960s, were suffering from uneven maintenance and overcrowding. Student residential facilities were insufficient to increase access to students from outside Maputo, academic staff had few opportunities to pursue postgraduate qualifications, and staff retention was beginning to be a problem. Overall, the stability of the institution was perceived by the university leadership as being under threat. The Rector later summarised the situation in 1990 as follows:

‘Universidade Eduardo Mondlane currently finds itself in a precarious situation. It faces serious problems of staff retention..... The university’s considerable success in attracting donor funding has placed it in an unstable and unsustainable position: it is dependent on continuing foreign assistance for the bulk of its operating budget. UEM output efficiency is low, with a drop out rate of roughly 50%. Employers have begun to question the relevance of its training in some disciplinary areas, and its research output has fallen far short of national needs. Recent years have seen an increasing number of students to be drawn from the southern part of the country..... These factors combine to erode university capacity to fulfil its institutional mandate of providing the nation with trained professionals, applied research and skilled service.’ (Matos, 1993, p.2)

A university strategic document *Present and Perspectives* was developed in 1991 that analysed the difficulties in some detail. The document was produced by a number of senior staff and discussed in a major university-wide meeting. The document contained recommendations to government to allow more autonomy in return for greater accountability. Government responded positively, for example, by agreeing to more autonomy and increased funding, including towards a new academic salary structure, de-linked from civil servant salaries. There was an ambitious list of recommendations for the university to implement. Donors were asked to consider more flexible, longer-term institutional support structured around strategic objectives. The Rector summarised the result of the process as follows:

‘The outcome of this process was a coherent strategy for institutional stabilization and revitalisation, and a considerable consensus among UEM staff, government leaders, and donor representatives that this was a worthwhile approach.’ (Matos, 1993, p.3)

In summary, the strategic objectives of the plan were:

- (i) to stabilise the institution by tackling problems of academic and administrative staff retention and training;
- (ii) to improve the learning and living conditions of students;
- (iii) to improve the university’s ability to respond to society’s needs for good quality graduates, applied research, extension and consultancy activities, giving priority to programmes deemed critical to the country’s present stage of development;
- (iv) to increase student numbers and graduate output by improving internal efficiency and making more effective use of available capacity; and
- (v) to work towards a nationally representative student body in terms of gender, class, and ethnic background.
- (vi) to accelerate development of key faculties and guarantee conditions for the centres, museums and archives;
- (vii) to improve internal management; and
- (viii) to create conditions conducive to subsequent sustainable and balanced development.

The summary given above and in more detail below suggests that the ideas and strategy in *Present and Perspectives* have been implemented to a reasonable extent. Some of the planned changes are on target - including student numbers and academic staff postgraduate training. Other changes are well under way - such as residential places for students and staff housing. The university government system has been restructured, for example with the appointment of Vice-Rectors.

Other objectives have not been completely achieved. Conditions in the country have changed dramatically. The war has finished and multi-party elections held. The economy has stabilised somewhat in the last year or so, but salaries have not been adjusted to deal with the massive real decreases since 1991. Despite the significant advances since 1991 the university remains in fragile condition.

The university has presented further proposals to government to increase salary levels and build-in incentives for staff who work hardest. The proposals also seek more financial autonomy. The university sees as a priority the need to restructure academic programmes in line with recent economic, social and political changes. The university sees its major problems as the material conditions for teaching and learning, which include material conditions of academic staff, students and technical and administrative support staff. UEM also cites as problematic (Annual Report, 1995/96, p 77-78) the administrative and financial management mechanisms and availability of financial resources. Some problems, such as wages and a social policy, are awaiting solutions that depend on UEM making agreements with the government. Others, like the new buildings of the Science Faculty, depend on UEM obtaining further support from donors.

The *Present and Perspectives* strategic document was prepared in the early 1990s and a new process of 'Rethinking the University' is under way. It will build up momentum during the year.

A group of staff, mostly without management responsibility, are integrated into a Strategy team, a University Commission, charged with facilitating the process of how the university might rethink itself in the light of the changes since 1991, such as the first multi-party elections, the approval of the law on private education, the approval to UEM statutes that increase university autonomy, and the prospects for increases in higher education. Six programme activities have been sketched out for further development in 1997.

- (i) how to consolidate the advances made in the university since *Present and Perspectives* was produced;
- (ii) retention of qualified staff;
- (iii) improvement of the quality of teaching, research and the provision of services;
- (iv) how to improve the institutionalisation of links with society;
- (v) development of international co-operation, increasingly involving the international community in the life of the university;
- (vi) improving administrative and financial management.

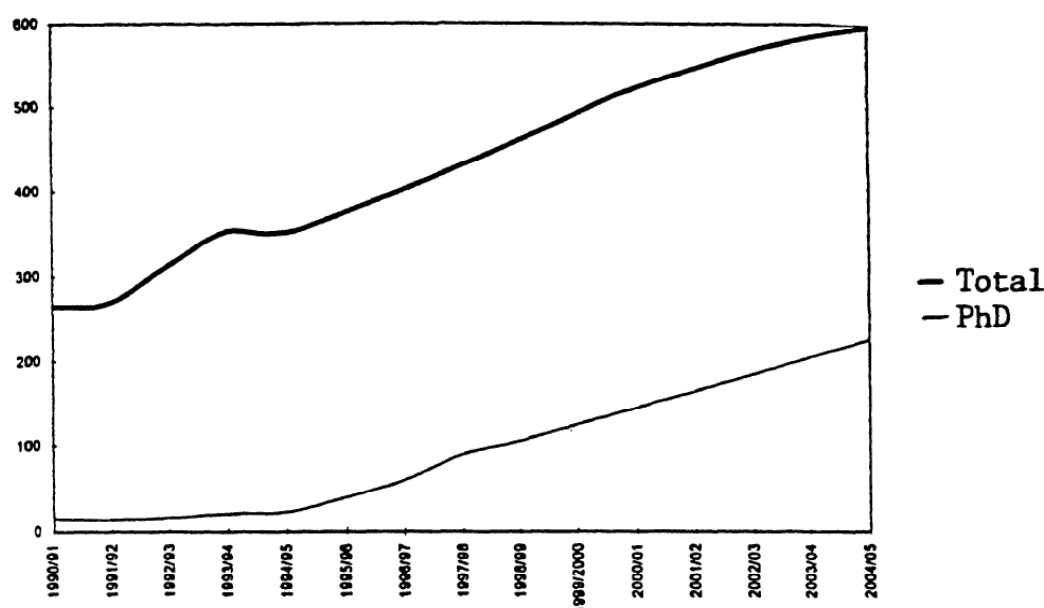
The strategy group will be presenting a document of diagnosis of the university by end-June, closely followed by another on the perspectives of government towards the university, and then three more documents (on trends affecting the university; an indicative plan for 1998-2000; and a strategic plan for the twenty-first century) by end-September for the university to debate.

At present the plans of the university are to continue expansion to around 10,000 students from the present 5,500 (and 3,000 in 1991/92). This involves expansion of installations, particularly on the Main Campus site. The plans include some expansion of the number of subjects taught at UEM, but rather larger expansion in numbers of students per subject in priority subjects.

By the year 2000, indicative plans suggest that over 100 academic staff will have PhDs, in comparison to around 50 by the end of 1997, and 14 in 1992. Around 120 staff are undertaking Masters and PhD programmes at this moment. The number of PhD qualified staff is planned to increase to over 200 by

2004 (see figure 3.3). The implications for research, teaching and university/economy links are enormous if the energy of these staff can be captured by better material and academic conditions.

Figure 3.3 Evolution of Mozambican academic staff numbers, including doctoral-level staff



Source: Professor Saraiva

3.2 The scope of Sida support

Sida support to UEM began not long after independence, in 1978-79, with a request to SAREC for support towards the beginnings of research. This support was extended in the early 1980s (Table 3.8) and an Open Fund was also established to stimulate research among the young Mozambican staff around the faculties. This led, in the period 1986-90, in the further extension of research support, which had previously focused on history, archaeology and the social sciences, to biology, medicine, sciences and engineering, and to even further diversity between 1991 and 1994. From 1985 the Secretary of the Research Council had developed a system for co-ordination of project proposals (Olsson, 1995, p 66). The head of the Gabinete for Studies and Projects, developed a uniform format for budget presentation and accounts. From this base, proposals are now presented with an institutional introduction to the university and to each faculty. Olsson makes the observation that 'the early development of research at UEM has been encouraged and supported at the institutional level'.

Olsson estimated in 1994 that roughly one third of recent funds has been utilised for acquisition, running and maintenance of equipment, around 10% for scientific periodicals and literature. Around one-third has been used for international collaboration, out of which collaboration with Swedish scientists has been strong. Much collaboration has been for research training and postgraduate qualification gaining. Support was continued at the same rate in the period 1995-97.

The second type of support began after the presentation of the university strategic plan Present and Perspectives in 1991. Sida decided to support the institutional development process with flexible funding. Support totalling 49,500,000 SEK has been made available to the university since 1991 and has been used to support student scholarships and nutrition, academic staff training, student library texts and manuals, construction of halls of residence, maintenance of premises, and equipment and consumables purchase Table 3.9).

Table 3.8 Summary of SAREC's support to research at UEM. 1978-97 (SEK '000)

	1978-80	81-85 (4 years)	86-90 (4 years)	91-94 (4 years)	95-97 (2 ½ years)
IICM	1,000				
Open Fund		2,950			
Travel fund		1,180	1,000	1,000	
Moz History Archives		1,115	4,525	4,500	3,000
Archives from Portugal		1,800	1,700		
Library			2,500	4,800	3,750
Archeology/Anthropology	395	2,810	2,235	1,650	1,526
Centre for African Studies		1,510	3,825	1,560	
History			320	530	370
Economics				400	255
Biology		400	4,200	6,175	4,790
Geography			260	1,510	
Agriculture				1,995	1,240
Veterinary				695	160
Medicine			1,200	2,230	1,481
Engineering			4,900	4,420	3,055
Sciences			2,000	7,460	5,677
Mathematics			155	1,975	
Maintenance workshop				1,730	1,030
Informatics				520	620
Administration			250	700	960
Unforeseen				450	755
Total	1,395	11,765	29,070	44,300	27,914

Source: Olsson 1995 Sarec 1995

Table 3.9 Sida support to Present and Perspectives, 1991 - 97

	Allocated	Disbursed
1991/92	12,500,000	10,765,742
1992/93	13,000,000	13,395,270
1993/94	8,000,000	9,735,954
1994/95	8,000,000	7,139,693
1996	8,000,000	6,755,448
1996/97	8,000,000	4,703,028*

* still under implementation

A third type of support, for departmental strengthening of two departments in the Agronomy Faculty, began in 1992/93, at first as part of support to the Ministry of Agriculture, and later directly managed by the university. Expenditure has totalled around 9 million SEK since 1993, and a further 4.5 million is projected for 1997 (table 3.10).

Table 3.10 Sida Support to Faculty of Agronomy

	Allocated	Disbursed
1992/93	2,000,000	
1993/94	2,220,000	2,174,716
1994/95	4,180,000	3,456,178
1995/96	5,040,000	3,331,906

Finally, some small support to the Electronics Centre has been started by Sida-INEC (ex-SwedCorp) to support extension activities and industrial links in the new Industrial Centre for Safety and Environment. The support is 525,000 SEK.

4 Current Situation in the Faculties

This section aims to give an overview of the situation in the faculties and other academic units. Table 4.1 gives a breakdown of student and staff numbers in 1995/96 by faculty. The Faculty of Engineering has well over 1,000 students in its four Licenciatura programmes, and Agronomy, Science, Economics and Law each have more than 600 students. Student numbers are increasing in most areas (Table 4.2) with very strong student demand in Law, Economics and for the new Social Science programme.

Women make up 24% of the student body (Table 4.3) They constitute more than half the student population in Medicine and Biology, and more than 25% in Agronomy, Chemistry, Chemical Engineering, Linguistics and Veterinary. Their numbers are not high in History, Geography and the rest of the sciences, and very low in Electrical and Mechanical Engineering.

Table 4.1 Student and staff numbers, by faculty, 1995/96

Faculty	Students	Teaching Staff					CTA
		Moz.FT	Training	For.FT	Moz.P T	For.PT	
Agronomy	540	40	(-23)	19	3	0	81
Architecture	178	12	(-0)	11	4	0	20
Science	765	87	(-15)	44	8	0	188
Law	647	10	(-1)	5	23	1	23
Economics	669	16	(-8)	12	21	0	27
Engineering	1,229	71	(-15)	20	32	2	96
Arts	489	49	(-16)	9	11	0	46
Medicine	422	33	(-4)	3	57	2	86
Veterinary	189	28	(-4)	5	13	0	95
UFICS	72	5	(-1)	0	0	0	7
Other organs	0	29	(-2)	4	0	0	805
TOTAL	5,200	380	(-89)	132	172	5	1,474

Table 4.2 Evolution of Student Numbers by Faculty from 1994/95 to 1995/96

FACULTY	1994/95	1995/96	DIFFERENCE	%GROWTH
Agronomy	489	540	+51	10.43
Architecture	168	178	+10	5.95
Science	668	765	+97	14.52
Law	577	647	+70	12.13
Economics	649	669	+20	3.08
Engineering	1,081	1,229	+148	13.69
Arts	430	489	+59	13.72
Medicine	471	422	-49	-10.40
Veterinary	164	189	+25	15.24
UFICS	0	72	+72	0.00
TOTAL	4,697	5,206	+503	10.71

Table 4.3 Gender Divide of student population, by Faculty 1995/1996

FACULTY	COURSE	TOTAL		SEX			
				MALE		FEMALE	
		No.	%	No.	%	No.	%
Agronomy		540	10.38	378	70.00	162	30.00
Architecture		178	3.42	151	84.83	27	15.17
Science	Biology	182	3.50	47	25.82	135	74.18
	Physics	120	2.31	105	87.50	15	12.50
	Geology	154	2.96	137	88.96	17	11.04
	Computer Science	216	4.15	166	76.85	50	23.15
	Chemistry	93	1.79	62	66.67	31	33.33
Subtotal (Science)		765	14.71	517	67.58	248	32.42
Law		647	12.44	511	78.98	136	21.02
Economic		669	12.87	515	76.98	154	23.02
Engineering	Civil	330	6.35	314	95.15	16	4.85
	Electrical	418	8.04	414	99.04	4	0.96
	Mechanical	316	6.08	310	98.10	6	1.90
	Chemistry	165	3.17	114	69.09	51	30.91
Subtotal (Engineering)		1,229	23.63	1,152	93.73	77	6.27
Arts	Geography	116	2.23	97	83.62	19	16.38
	History	188	3.62	158	84.04	30	15.96
	Linguistics	185	3.56	105	56.76	80	43.24
Subtotal (Arts)		489	9.40	360	73.62	129	26.38
Medicine		422	8.12	195	46.21	227	53.79
Veterinary		189	3.63	104	55.03	85	44.97
UFICS		72	1.38	56	77.78	16	22.22
TOTAL		5,200	100	3,939	75.75	1,261	24.25

Table 4.4 shows the extreme unevenness of Mozambican academic staff development. Arts, in 1995/96, had 49 full-time Mozambican staff, 11 with PhDs and 11 with Masters, and 16 undertaking postgraduate training. Science had 87 full-time Mozambicans, 6 with PhDs and 20 with Masters, and 15 in training. Other faculties, like Law, with just ten full-time nationals, none with PhDs, and Economics, with 16 nationals and no PhDs, are in a much weaker situation. Some faculties like Agronomy, Science, Engineering and Arts, are in a relatively intense phase of postgraduate training, but others have low numbers of staff on postgraduate courses, which is bound to impact on the potential for medium term academic development.

Table 4.4 Full-time Mozambican Teaching Staff by Sex and Educational Level, 1995/96

FACULTY	DEPT	TOTAL			EDUCATIONAL LEVEL							
					BACHELORS		LICENCIA-TURA		MASTERS DEGREE		DOCTOR-ATES	
		T	M	F	M	F	M	F	M	F	M	F
Agronomy		40	24	16	0	0	11	6	11	9	2	1
Architecture		12	10	2	0	0	9	2	1	0	0	0
Science	Biology	18	12	6	0	0	8	5	3	1	1	0
	Physics	13	13	0	0	0	11	0	2	0	0	0
	Geology	15	14	1	0	0	8	0	3	1	3	0
	Computer Science	25	24	1	1	0	16	0	7	1	0	0
	Chemistry	10	6	4	0	0	4	3	1	0	1	1
	Buscep	6	3	3	0	0	2	3	1	0	0	0
Subtotal (Science)		87	72	15	1	0	49	11	17	3	5	1
Law		10	8	2	0	0	6	2	2	0	0	0
Economics		16	12	4	0	0	7	2	5	2	0	0
Engineering	Civil	16	15	1	1	0	10	0	1	1	3	0
	Electrical	20	19	1	0	0	17	1	0	0	2	0
	Mechanical	20	20	0	0	0	17	0	3	0	0	0
	Chemistry	15	12	3	0	0	10	2	0	1	2	0
Subtotal (Engineering)		71	66	5	1	0	54	3	4	2	7	0
Arts	Geography	10	8	2	0	0	3	2	2	0	3	0
	History	18	14	4	0	0	7	4	3	0	4	0
	Linguistics	21	17	4	0	0	8	3	6	0	3	1
Subtotal (Arts)		49	39	10	0	0	18	9	11	0	10	1
Medicine		33	18	15	0	0	16	15	2	0	0	0
Veterinary		28	19	9	0	0	13	5	5	3	1	1
UFICS		5	4	1	0	0	1	0	0	1	3	0
Other organs		29	21	8	1	2	16	4	3	1	1	1
TOTAL		380	293	87	3	2	200	59	61	21	29	5

Source: UEM, Annual Report 1995 - 1996

Women staff numbers totalled 23% in 1995/96, very close to the student percentage. Women staff cluster, not surprisingly, in the same departments as women students, with 40% of staff in Agronomy, 45% in Medicine, 40% in chemistry, 33% in Biology, and 32 in Veterinary (Table 4.5).

Table 4.5 Gender divide of Mozambican academic staff, by faculty 1995/96

FACULTY	SEX			
	MALE	%	FEMALE	%
Agronomy	24	60,00	16	40,00
Architecture	10	83,33	2	16,67
Science	72	82,76	15	17,24
Law	8	80,00	2	20,00
Economics	12	75,00	4	25,00
Engineering	66	92,96	5	7,04
Arts	39	79,59	10	20,41
Medicine	18	54,55	15	45,45
Veterinary	19	67,86	9	32,14
UFICS	4	80,00	1	20,00
Other organs	21	72,41	8	27,59
TOTAL	293	77,11	87	22,89

The relatively large numbers of technical and administrative staff masks their low educational level, which is also changing very slowly, if at all. Around half the staff have only primary education, only four years in Mozambique. Only 24% of staff have mid-higher level education and this proportion fell a little last year. Salary levels for relatively well qualified technical and administrative staff, in comparison to the private sector, are even worse than for academic staff. This situation is an issue of concern, given the university's prioritisation to administrative and managerial capacity building.

What follows is a brief summary of the academic situation in the faculties.

Faculty of Agronomy and Forestry Engineering (FAFE)

This faculty had 62 staff in 1995/96, 59 full-time, 40 Mozambican, of whom 23 were in training programmes. The student body totalled 540, in two courses, Agronomy and Forestry Engineering. Three Mozambican staff have doctorates and 20 have Masters degrees.

Presently FAFE is organised in 3 Departments and offers graduation in four areas (orientations), namely crop production, rural engineering, extension and forestry engineering. The courses have a duration of 5 years followed by 3 months of diploma work.

The research activity at the faculty includes 20 research projects not related to postgraduate degree qualifications and five research projects related to staff development at PhD level, one being financed by Sida. We were unsure whether the faculty has taken advantage of regional training programmes, such as that offered by the African Economics Research Consortium (AERC) for agricultural economists.

Sida has funded collaborative research through SAREC (4 projects), and recently began a departmental strengthening programme. (For more detail on this item see section 6).

FAFE has presently two other main sources of external support, namely Dutch and Italian. The Dutch support has concentrated in the area of Plant, Soil and Water. This project covers mainly staff development and teaching assistance. A major twelve year NUFFIC supported programme has been responsible for 2 PhD and 9 Masters degrees. The Netherlands Government supports the Faculty through the MHO programme and through technical assistance with expatriate staff.

It is foreseen that the MHO NUFFIC programme in Agronomy will finish in December 1997 which implies a loss of support.

The Italian Project covers mainly teaching assistance and some limited support for research on sunflower production.

Another source of support presently beginning is a research program financed by the World Bank and implemented by IFPRI in collaboration with four American universities, namely Cornell, Madison, Florida and Michigan university. It is expected that by the year 2000 a MSc program will be established. The Sida supported program particularly involving SLU is anticipated to take part in this exercise.

Architecture

The Architecture and Physical Planning Faculty is the university's newest faculty and programme, beginning in 1986. Its Licenciatura degree programme had 178 students by 1995/96, and has had 19 graduates in the last two years. It has only 12 full-time Mozambican academic staff, complemented by 11 full-time foreign staff, and 4 part-timers. No Mozambicans are at present being trained. It has benefited from long-term support from the Italian government. The Faculty has only recently begun research programmes but has a well developed project-based student research and development programme.

Science

The Faculty of Science consists of six different departments: Mathematics and Informatics, Biological Sciences, Geology, Physics, Chemistry and Basic Sciences. The first five departments provide degree courses to 'Licenciatura'. At the same time these departments are responsible for teaching Natural Science subjects, Mathematics and Informatics to other faculties of the university, Engineering, Agronomy, Medicine, Veterinary, Economics, Arts and Architecture. The Basic Sciences Department was created with the goal of bridging the gap between secondary school and university in the natural sciences and mathematics. It teaches a one semester course to around 500 students of Sciences, Engineering and Agronomy per year. Altogether the Faculty teaches about 4,000 students per year from other faculties.

At the moment there are some 400 students who are participating in complete programmes of Science and will be 'majoring' in one the five disciplines, distributed as follows: 150 in Mathematics, 100 in Biology, 70 in Geology, 50 in Physics and 50 in Chemistry.

The teaching staff at the moment is 118, of which 79 are Mozambican. Of the Mozambicans, 8 have now completed their PhDs and another 8 have Masters degrees. There are 14 staff undertaking Masters degrees and another 12 in PhD programmes abroad, some sandwich and others full-time.

The Faculty is one of those most capable of expanding research activities and is aware that localisation of postgraduate training could begin in the next years. It has begun to give strong encouragement to staff to publish internationally.

The main non-government funds come from NUFFIC and Sida-SAREC. NUFFIC supports the major programme in Basic Sciences. Sida-SAREC has provided long-term support to all science departments, including departmental support to Biology and Marine Biology. There is project support to research from NORAD and scholarship support from British Council. A major World Bank credit has been made available for a large new building for Physics and Chemistry on the university Campus. It has space for teaching facilities, including laboratories, and for research, though no resources are available for equipping research laboratories.

The Swedish support to the Faculty has been extremely important, particularly for the training of staff members at postgraduate level and the establishment of good research facilities.

Law

The Faculty of Law was opened in 1975 but closed during the period 1983-1987 when university student numbers were very low. By 1995/1996 the Faculty had 647 students, 10 full time staff members and 24 part time teachers. The annual average intake of students varies between 100-110. Two staff members are under training, 1 in a PhD and 1 in a MSc programme. There is an extremely limited amount of research work in this Faculty, only one teacher being involved in research (Annual Report 1995-96). In 1995-96 the Faculty graduated 38 lawyers with Licenciatura degree (five year course with diploma). The Faculty of Law receives support from Portugal for recruitment of teachers.

Economics

The Economics Faculty is, at the same time, both an extremely strategically important unit, running the courses in Economics and in Management, and one of the most problematic to build and sustain. The resources pumped into the Faculty have not, as yet, been able to transform the situation. The Annual Report gives 16 full-time Mozambican staff members, but eight were away on full-time postgraduate training, and we were told that only three staff members are actually working full-time. The Faculty has begun to use the excellent regional Masters training programme established by the African Economic Research Consortium, but could well use it more extensively.

The Faculty had 670 students in academic year 1995/96. They were taught by 12 foreign staff, and 21 Mozambican part-timers, as well as the few full time Mozambican teachers. The two constituent departments, Economics and Management, had no departmental heads we were told. Staff availability to supervise Licenciatura dissertations is weak so that, in the years 1994/95 and 1995/96, only 9 students graduated by the 'normal' route. Another 104 students obtained their Licenciatura degrees by 'dispensation', they were exempted from presenting a dissertation.

Another capacity building project is about to begin, with \$1.8 million funding, equally from the Italian Government and the World Bank. However, the university faces a major challenge with so few full-time local staff. Also, thus far, the chosen method of staff development seems to have been to send Mozambican abroad full-time, as opposed to the mixed full time/sandwich training systems in place in most other faculties. This can act to weaken local research capacity. The Faculty does not appear to be taking advantage of the strong demand for economic consultants to build its own income generating extension units, leading to further fragmentation as individuals seek private work.

Engineering

The Engineering Faculty, with 1229 students, 91 full-time and 34 part-time academic staff in its four courses (Civil, Electrical, Mechanical and Chemical), is the biggest Faculty in the university. Student numbers vary from over 400 in Electrical Engineering to 165 in Chemical Engineering. The only department to have a significant proportion of women is Chemical Engineering with 31% of students and three of the fifteen full-time Mozambican academic staff. Only six staff are women though one is a head of department. Civil Engineering takes around 5% women students, the others less than 2%. A recent document from the Faculty analyses the situation of women and proposes a series of actions to improve access and support for women staff and students.

Faculty development has been relatively uneven. Of the present Mozambican staff, only three have PhDs, and another seven have Masters. Another six are away doing PhDs and six are doing Masters. Of those doing PhDs, four are in sandwich mode and three are supported by Sida-SAREC. Five of the six are in Chemical Engineering.

Faculty plans include that 25% of staff will have PhDs in the next ten years. The pace of training is largely determined by the need to teach large numbers of students and lack of senior Mozambican staff to spearhead postgraduate training. Early research training of staff has not, as yet, been able to seed research groups, except in Chemical Engineering, as so many of these staff obtained senior jobs outside of the Faculty and university.

The Faculty has, apart from Sida support, also obtained funding from the World Bank (for the buildings of Mechanical and Electrical Engineering, and the laboratories in Control, Materials Testing and Internal Combustion Engines), the Netherlands (for MHO programmes in Water Resources - in Civil Engineering and Telecommunications - in Electrical Engineering), and from GTZ (for Mechanical Engineering and Electrical Engineering that includes equipment, teaching assistance, training of lecturers at Masters and PhD levels, and support to build housing for junior staff).

The Faculty thus appears as a unit working hard to train quite large numbers of engineers, but with rather weak research capability except in Chemical Engineering, where a group of PhD level staff will emerge with potential to provide research leadership in the next few years.

Arts

The Faculty has 700 students and 49 full-time members of staff, 40 Mozambican. Its departments include Archaeology and Anthropology, History, Geography, Modern Languages and English. The courses taught are Linguistics, History and Geography. At present, 12 Mozambican staff hold PhDs, just two of whom are women. The Dean and Sub-Dean for research are women.

Sida-SAREC supports research projects in Anthropology, Archaeology and History. It has also supported Masters and PhD training programmes, including one completed sandwich PhD. The Faculty also receives support for research from the Ford Foundation and NUFFIC.

The Faculty has designed much of its research so that it feeds directly into teaching. With 12 local PhD holders the Faculty has capacity for research and mounting postgraduate courses. They are, however, constrained by the very low salaries which force staff to take up jobs outside the university. Staff have little time for research, but the Faculty is thinking about how to increase research activities.

The Faculty is planning to conduct a major curriculum review which will be the basis for future activities in teaching and research. The Faculty feels it is important to conduct the review at this time in response to the changes that Mozambique has gone through. The review may assist the Faculty in defining its research priorities and directions. It is hoped that more regional co-operation will be emphasised and exploited to give the Faculty more academic exposure.

Directions for future development and support are envisaged around:

- (i) a major curriculum review;
- (ii) embarking on more research activities in the various disciplines including gender studies;
- (iii) addressing the problem of staff attrition and coming up with remuneration packages that might give incentives for staff to stay and give their work time to the university;
- (iv) possible mounting of postgraduate programmes in the Faculty;
- (v) continuing research as some staff move into post-doctoral research.

The Faculty of Medicine

The Faculty of Medicine has enjoyed, since Independence, a close co-operation with the Ministry of Health. Most of the trained doctors had to undergo a period of service in the districts and provinces before they could join the Faculty. The staff development plans were determined by the Ministry of Health. This resulted in low recruitment of academic staff. This has changed in the last 5 years and the Faculty is more independent in determining and recruiting its academic staff. However, it should be noted that the close co-operation with the Ministry of Health has resulted in the most senior doctors, working in the central hospital, being engaged in teaching activities at the Faculty.

The Mozambican teaching staff (full and part time) covers 95% of the requirements. Presently there are 34 full-time academic staff, 5 with MScs and 29 with Licenciatura. There are 2 staff members doing a PhD training programme. The Faculty has also already identified 3 PhD candidates and 7 MSc candidates to be trained. Overall 45% of the full-time staff are women. In 1995/96 there were

28 part time Mozambican teaching staff members. Of those there is one with a PhD, and 10 have MScs.

In 1995/96 there were 422 students enrolled in the Faculty of Medicine. In the last few years the number of students enrolled has declined, reflecting higher drop-out rates. Nevertheless, the number of new students enrolled annually is still close to the intake capacity.

There is a significant amount of baseline research in the Faculty. SAREC is financing 4 research projects, 2 being for degrees. Annually the Faculty has a competition on research programmes designed specifically for students to stimulate their interest in research. In 1995-96 there were 12 such projects undertaken by students. The trend has been a decline in the number of students involved in these activities, mainly due to lack of supervisors (few full-time academic staff available), lack of funds to cover this type of research and no incentive for taking part in this type of competition since the results are usually not published.

Overall, the major difficulty in the area of research training has been to secure funds for applied research and which is crucial for engaging students as part of their training programme.

Teaching load of full-time academic staff is said to be a major limiting factor in speeding up staff development.

The Faculty has indicated its preference for sandwich programmes for staff development, particularly involving Universities in the region. They have already experience in establishing external examination panels for degree accreditation.

The Faculty would like to see future Swedish assistance to be more in the form of institutional support.

The Faculty of Veterinary Science

The Faculty of Veterinary Science was established in 1963 with a capacity to cater for 15 students at a time, in terms of teaching and laboratory facilities. Presently, the Faculty is taking, on average, about 30 students per year. This has meant an extra load for the staff, both academic and technical.

The Faculty is organised in 4 Departments namely Animal Production, Pre-Clinical, Para-Clinical and Clinical. There are 8 teaching labs, a Veterinary Clinic and a Farm. The latter two provide both support for teaching and services, thus generating some income for the Faculty.

The Faculty has been built in the same campus as the National Institute for Veterinary Research (INIVE) under the Ministry of Agriculture. This presents great advantages of integration and use of common resources and facilities. There is close collaboration between these two institutions.

In 1995/96 there were 189 students enrolled in the Faculty of Veterinary Sciences.

There are 29 Mozambican full-time academic staff 1 with a PhD, 14 with MSc, 2 with Diploma and 12 with Licenciatura. Ongoing staff training there includes 3 PhDs (all in sandwich programmes) and 2 MScs. The Faculty also has 13 part time teachers. Presently there are only 5 expatriates as full-time academic staff.

The Faculty receives support from SAREC, IFS, EU, Germany and the Netherlands, for staff development and research. Presently, there are about 25 different ongoing research projects not related to degrees.

Staff development plans include mostly full-time studies, although there are some sandwich programs. These are seen by the Faculty as taking a very long time and the Faculty fears that staff members may get overloaded with administrative assignments or teaching, hence leaving very limited time for research.

The mission shares the view of the Faculty that the establishment of post-graduate training in Mozambique at the level of MSc may not be justified unless in a regional context or for the PALOP. A major limiting factor is the limited student intake capacity and other supporting infrastructure.

The Faculty of Veterinary Science has 7 ongoing research projects related to post-graduate training, three being for PhDs and four for MScs.

UFICS

The Social Science Training and Research Unit is an embryonic Faculty which took its first intake of students in 1995/96. These will undertake a Bachelor's Degree before specialising later at Licenciatura level. This approach has allowed the Faculty to develop a relatively innovative curriculum with a foundation year, before beginning options that allow later specialisation in either anthropology, sociology or political sciences. Licenciatura programmes will probably focus on social action, state administration, and international relations, as well as the Bachelor's level foci. The five staff of UFICs are not yet formally integrated into a Faculty structure.

The Centre of African Studies (CEA)

The Centre of African Studies undertakes research teaching and extension in the areas of human and social science with particular focus on gender, nationalism, religion, the social and economic effects of war, and the administration of justice. It has fifteen full-time staff, one with a PhD. Another is studying for a PhD and four are undertaking Masters programmes. The Centre produces an internationally respected journal *Mozambican Studies*, which it has continued to produce in difficult circumstances. It receives limited funding from a diverse range of sources, and has an organised consultancy system. It has attempted to build up overhead recovery requirements on research grants but suffers from a lack of core funding to pursue its research programme.

Historical Archives

The Historical Archives holds the National Archives of Mozambique and was established soon after Independence. It is located in five different buildings with a total of fifty rooms. It carries over 400 titles on Mozambican history retrieved from Portugal. Currently it holds 25,568 books and 1,596 journals forming its library. The photographic library has over 50,000 pictures and 3,454 hours of tapes are held in the audio-visual archives, covering various aspects of Mozambican history.

The Archives are staffed by some 57 workers. The Director holds a PhD, the first and only one obtained directly from UEM. Whereas the archive has worked hard to train its staff abroad and through locally mounted programmes, attrition has been very high. Between 1985 and 1997 the Archives lost 30 of its trained staff to other organizations, where salaries are higher.

Physical facilities are a major problem. Not only is the space inadequate, (all rooms, corridors and walkways have been converted into archival space), most of the buildings are old. The main building is leaking and the collections are constantly under threat of being destroyed by rain water.

There is a plan for a new building for the Archives. A project proposal has been presented to the European Union but no definite response has been received.

Sida-SAREC has supported the Historical Archives from their inception soon after independence. The support has included the setting up and operational costs, equipment, training, as well as support for research and publications. The Archives publishes a well respected journal *Arquivo*, a biannual bulletin *Estudos*, and *Instrumentos de Pesquisa and Documentos*, which are series meant to disseminate the results of research and inventories by the Archives.

Although the Historical Archives are the national depository, they seem to be treated like any other university department as far as funding is concerned. This greatly constrains the execution of an important national responsibility. There is a case here whereby the Archives could argue for different treatment by the government to obtain additional funding as a national archive.

5 Current Research Situation

There is a slow but definite development of research culture within the university. Around one-third of staff are now actively involved in research activities. The number of research projects is increasing, reaching 143 in 1995/96 (see Table 5.1). The number of joint projects has also been increasing, indicated by the ratio of number of projects to number of researchers, increasing from 1.0 in 1991/92 to 1.5 in 1995/96. The highest concentrations of researchers are to be found in the Science, Agronomy and Arts Faculties, but there are some Mozambican researchers in Medicine and Veterinary Sciences, and in Centres such as the Centre for African Studies, the Informatics Centre and the Historical Archive. It is relevant to state that, of the 380 full-time Mozambican academic staff, 89 were enrolled in advanced training programmes in 1995/96, and this increased substantially to 118 by April 1997. Of the 118, exactly half (59) are undertaking Masters, with 59 studying for PhD. Half the PhDs are of the sandwich type.

Table 5.1 Research projects in 1995/96

Organ	Total	Concluded	Abandoned	UNDERWAY				RESEARCHERS INVOLVED
				Sub-total	Masters	Doctorate	Others	
Agronomy	37	4	4	29	—	5	24	44
Architecture	6	1	—	5	—	—	5	7
Science	38	—	1	38	5	8	25	49
Law	1	—	—	1	—	—	1	1
Economics	2	—	—	—	—	—	2	9
Engineering	4	1	—	3	—	2	1	6
Arts	10	2	—	8	—	3	5	23
Medicine	10	—	—	10	1	1	8	14
Veterinary	10	2	—	8	3	3	2	12
MHN	4	—	—	4	—	—	4	1
AHM	4	—	—	4	—	—	4	10
CEA	13	5	—	8	2	1	5	29
CIUEM	4	1	—	3	—	—	3	8
TOTAL	143	16	4	121	11	23	89	213

In terms of the hierarchy of research environments developed by Olsson (1995), most of the research is at the lower two levels (see Table 5.2). Our overall assessment of research is that some faculties, if they can stabilise their PhD level Mozambican staff in post, are capable of consolidating qualified research programmes, linked to the gradual development of Masters and/or doctoral postgraduate programmes. Although doubts were sometimes expressed as to whether staff availability would allow much development of this type, there was a general feeling that proposals for university action would soon be needed.

Table 5.2 Hierarchy of research development

****	Excellence in research	• Scientific leadership • Critical mass of researchers
***	Qualified research:	• Post doctoral research & dissemination
**	Capacity development:	• Research training • Scientific equipment
*	The basis for research:	• Recruiting for research • Scientific information • Databases • Research administration

Source: Olsson, 1995, p.83

Such proposals would need to take into account the different conditions in each Faculty. Some faculties believe they are ready to development proposals (Science and Agronomy), and others are aware of possibilities in some subjects (history in the Arts Faculty, for example), some would consider only as part of regional programmes (Veterinary). Medicine is thinking of how it can produce a credit-based modular programme. One issue is the extent to which the university can sustain a highly specialised, classical, curriculum model. A more modular, practice-based, interdisciplinary approach may be more appropriate in some circumstances. In Arts and Social Science, for example, the sum of trained staff (in all departments, and the CEA and Historical Archive), looks considerably stronger than the parts. Similarly, the subjects of environment and sustainable development looks much more viable if all relevant staff, from every Faculty and Centre, could be involved.

Research, in the main, is focused around local problems and on the training needs of Mozambican staff. The 171 page Research Report (UEM, 1996) paints a picture of a diverse and rather applied research culture, with significant focus on interdisciplinary issues. There is a trend towards taking more part in regional programmes, and the political changes in South Africa are likely to make a major impact.

Research development, however, is still very fragile and motivated in the main towards postgraduate qualifications. The low salary levels, and the lure of the consultancy business, presents a significant problem for the university. In particular, we believe there is a need to develop incentives towards local post-doctoral research at international standards to go alongside the high quality pre-doctoral and doctoral research in place.

Previous Sida-SAREC publications (Wield 1991, Priestley 1993, Olsson 1995, Mugambi 1995, Rudengren et al 1996) have summarised the development of research capacity in general, and in Science, Engineering, Marine Biology, Health and Library Systems. Section 5 focuses on staff development, research training, on physical, administrative and managerial capabilities, and on outcomes of support to research.

5.1 Staff Development

The UEM has an academic staff development policy and plan. The policy is articulated in the document Present and Perspectives (1991, p 32-33). The implementation has more or less followed the rate set up in the plan.

There is a university regulation document on development of academic careers (UEM, 1990). These regulations define in detail policies and guidelines for recruitment, training and promotion of academic staff, both permanent and specially recruited staff, expatriate and local. The teaching expectations for each grade is outlined in the regulations. The categories of permanent staff are Full Professor, Associate and Assistant Professors. Entrants to the staff usually begin as student teachers, and after Licenciatura become 'estagio' Assistants. The minimum period of service before becoming an Assistant Professor is five years and a PhD. Thus, the minimum time to reach the professorship

ladder is ten years, and it is usually longer. Career progression after that is also slow, as shown by the fact that there were no Mozambican Full Professors and only 6 Associate Professors by 1996.

Proposals for Masters and PhD training pass through academic councils at unit, Faculty and university levels for approval. There is a plan to gradually decentralise the decision-making process to the Faculty level. A total of 59 staff are undertaking training for PhD, of whom 17 (29 %) are women. It is interesting to note that a higher proportion of women elect to undertake sandwich training, which allows them to stay in Mozambique for most of each year where they often have significant domestic pulls. 35% of doctoral sandwich trainees are women compared to only 23% of full-time doctoral students outside the country. 60 students are doing Masters degrees, 15 (25%) of whom are women and all but 2 full-time outside the country. The staff development plan includes equal opportunities for women. It is not clear, however, that any special programmes are in place to improve the proportion of women staff.

The strength of Swedish support is judged to be in research training, particularly, though not exclusively, sandwich training. The university believes that such sandwich training, and its gradual partial localisation, is a priority for future support. UEM has an increasing number of PhD trained staff who, combined with outside researchers, could improve local training input. Such an approach facilitates capacity building, training into research, the utilisation of staff in teaching and other responsibilities as well as allowing the students to be with their families. A significant number of women choose sandwich systems for this reason.

The university believes that emphasis should be directed at strengthening existing research groups. For some time, however, research will have to be linked to postgraduate training because such a large number of UEM staff are still in need of such training. Post-doctoral research should, however, be supported to enable those who have completed their PhDs to continue with research and to maintain research links with the universities abroad where they have studied. There is also a need to address the gender issue, particularly to assist those staff who find it hard to leave the country because of family constraints.

5.2 Effectiveness of research training and supervision

UEM has established a set of regulations for staff members participating in sandwich training. From these rules it is quite clear that the university is favourable to this particular kind of arrangement for post-graduate training.

As examples of these rules it can be mentioned that it is possible to initiate PhD studies immediately after completing an MSc degree, without having to serve a minimum of two years working at the university before embarking on the highest degree. This rule stems from the fact that during sandwich training, the staff member is expected to devote not more than three (maximum six) months abroad per year. However, the period of stay abroad can be extended with specific permission of the Rector.

This arrangement makes it possible for the university to profit from the presence of the staff member, who is expected to share the teaching load with his or her colleagues at the department during the full period of the sandwich training. These limitations on the total activity of the sandwich training naturally prolongs the time of the studies, which, however, is balanced by the possibility for UEM to profit from teaching by the graduate student throughout the training period. Another advantage of the sandwich training is that the trainee stays on as a staff member in his or her department and does not lose contact with colleagues.

For the sandwich training to work well it is important that the training period only ends with an MSc or PhD, but is considered as the beginning of a research programme that will be carried forward in a sustained manner after the training period has been completed. There are very clear indications that this is the case in the Faculty of Sciences, where for instance, the successful long term project in Marine Biology is a case in point. The equipment that has been installed during the sandwich programmes are well kept and are being used continuously.

As part of this evaluation, contacts have been made with some of the Swedish leaders of collaboration programmes and indications are that:

- the Swedish project leaders are pleased with the sandwich programmes and would be prepared to enter into new collaboration arrangements with UEM or other universities in developing countries;
- they have engaged themselves in the procurement of new equipment and in some instances also arranged transfer of used equipment from their own laboratories to UEM;
- an important factor for making them interested and committed to the development of UEM appears to have been their visits to Maputo, which has made it possible for them to appreciate the local possibilities but also the difficulties of conducting training and research projects with their counterparts/graduate students at UEM;
- the Marine Biology programme, that has been going on for a number of years, has resulted in a research collaboration proper since a Swedish PhD student has done his field work at Inhaca Island supported by regular funds from the university of Gothenburg;
- to work with the Faculty of Sciences at UEM has been a very positive experience and one of the Swedish project leaders indicated that it is much easier to work with UEM than with many other universities in developing countries;
- a definite experience from the programmes in the Science Faculty is that it is an advantage if there are more than one, preferably several, post-graduate students involved in the same programme;
- in some cases the financial transactions between UEM, the project and also customs clearance in Mozambique have not been as smooth as the project leaders had reasons to expect. However, the experiences seem to be very different when comparing different projects;
- there are indications from some of the projects that the cost estimations, particularly regarding equipment, have been on the low side;
- at the early stages of the collaboration some of the projects, particularly those requiring field work, were severely hampered by the civil war. However, things improved considerably after 1993 and most of these projects are now running smoothly;
- the results of the research work from the different projects are of good quality and are regularly being published in international journals or as conference reports;
- one of the Swedish project leaders is suggesting that regional co-operation in some fields of research should be initiated to complement research collaboration Swedish departments;
- it is important that the UEM is flexible regarding the time spent in Sweden by the graduate students particularly during the first year of the project and also during the last year before graduation. It is important for the student to get off to a good start and thesis submission normally requires a somewhat longer stay;
- the general impression is that the UEM students are ambitious and hard working and have a solid background in their fields of specialisation.

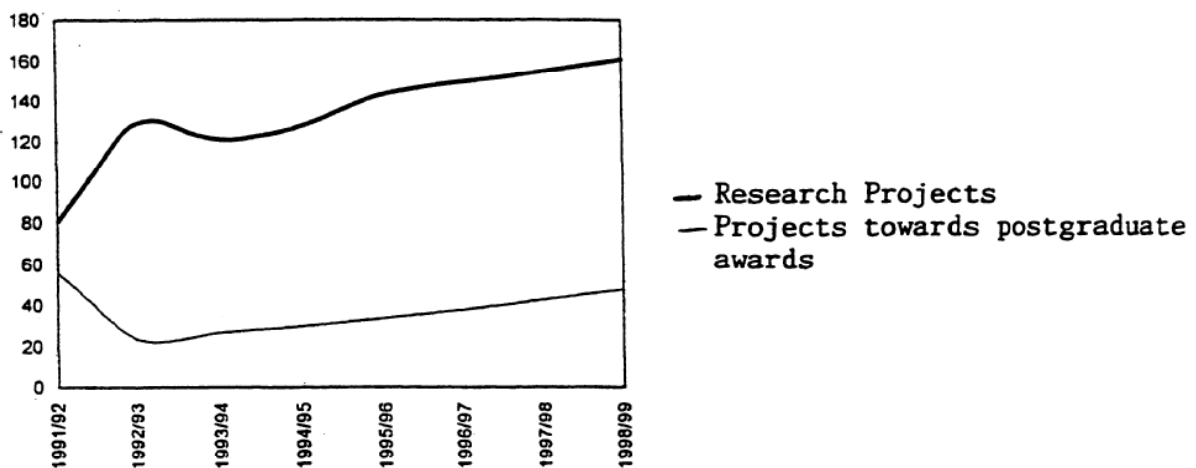
In assessing the effectiveness of research training using the sandwich system as compared to full-time training we would like to caution against simple quantitative measures and emphasise the qualitative. For example, the contribution to teaching and administration at UEM whilst a person studies, the access of UEM to research equipment acquired through PhD projects but used for other research, including Licenciatura Diploma research, needs to be taken into account. A full assessment of the different modes of training (full-time versus sandwich) would also require data on the cost of training, time absent from work at UEM, and whether the modes had different retention rates. The quality and relevance of the research would need to be evaluated and an assessment made of whether

research was more easily and cheaply continued after graduation. This would be a major study in its own right and most data would need to be generated.

Of the PhDs completed between 1992 and April 1997, 25 in total, 14 were in sandwich mode and 11 in full-time mode. The sandwich mode had an average duration of 5.5 years, compared with full-time duration of 4 years. Figure 5.1 suggests that the number of sandwich projects for Masters and Doctorate degrees is planned to increase over the next few years.

Overall, there is considerable support for sandwich programmes. Faculties that do not, at present, have the system would like to establish it.

Figure 5.1 Research projects, including those towards postgraduate qualifications



5.3 Research environments and their sustainability

There is considerable encouragement of research in UEM, and a welcome increase in resources for academic staff training. There is, however, rather weak local supervisory potential, and what there is, is not being used to its full potential. Research especially, after PhD, suffers from low material incentives. There is little flexible funding for small and starter projects. The university Scientific Council is beginning to act as a clearing house for research, but needs strengthening if decision-making on projects is to be improved and Open Funds effectively used. The trends in research include: rather more opportunity to go full-time to do PhDs, which will improve completion time but may lead to increased staff retention problems; increased links with South Africa; gradually improved, but still weak, regional links with the rest of the region; and the beginnings of thinking about building local supervisory potential.

UEM's ability to move into a new phase of qualified research depends on: increased national support for research as a funder-user of research and its results; the university's ability to convince government and other potential users that its knowledge and skills are relevant and its interface institutions are well organised; and continued support from the external research funding agencies.

The university has gradually built a national academic staff with a proportion having research-based qualifications. There is a well-organised process to evaluate the quality of proposals for research training. As yet, it has had less success in building post-doctoral led research clusters. The next three

years present a major opportunity to consolidate a research base within some faculties of the university, as staff come back with PhDs.

Organizationally, the university now has working Sub-Deans for research in each Faculty. The Director for Research and Academic Staff Development, Dr Getimane, co-ordinates twice-yearly meetings of Sub-Deans. There is a plan to re-establish a university Research Committee

The Research Committee would be the natural place to develop academic monitoring and evaluation capacity and to organise university research Open Fund systems. The university is planning to request government for a research budget line for the first time.

Sida-SAREC support has been key in the development of the following:

- (i) some institutional capacity in the development and presentation of coherent university-wide research proposals;
- (ii) building archival, research publication and periodical infrastructure;
- (iii) sandwich training programmes systems and associated laboratory and information bases;
- (iv) support for research clusters and team building at the same time as supporting research training at PhD level.

As suggested earlier, the university is moving closer to planning post-graduate programmes. Some programmes, in educational planning, financial economics and justicial sciences, linked to overseas universities, are being planned. The university is beginning to think about the philosophy of post-graduate studies, for example, the balance between vocational programmes, perhaps leading to Postgraduate Diplomas, and more advanced Masters. It is also beginning to think about whether, in some cases, it would be easier to open doctoral programmes. There is the further issue that the present Licenciatura with Diploma, not only causes major graduation rate losses, but might also be a luxury when Masters programmes begin, perhaps the Licenciatura Diploma could also count as Masters Diploma, with students obtaining a Bachelor's degree if they complete the course work of Licenciatura. A university committee is being established to review post-graduate provision with a two-year planning time frame. Curriculum revision is part of the university strategic plan.

The university is almost ready, then, to begin postgraduate training, which may be through joint programmes with overseas universities, regional programmes, and/or building on sandwich partnerships.

Supporting the evolutionary development of existing research environments would involve:

- (i) support for post-doctoral research;
- (ii) support for the planning of post-graduate programmes;
- (iii) support for UEM as it develops capability in academic monitoring and evaluation of research;
- (iv) support for research Open Funds and for development of the associated decision-making processes.

5.4 Physical Resources

Developing the physical resources for research has been an integral part of Sida support to research capacity building, and there is evidence that the build-up has continued, though from a rather weak base.

The Science Faculty, in particular, has been able to use research support to develop several laboratories, that are used by all researchers, since it has been a rule that equipment has been bought for collective use and not as the property of any one project. We visited the research laboratory in Biology, the Solar Energy site, and the Marine Biology laboratory on Inhaca Island and found them in good shape, simple but clean and efficient.

The university has also benefited from the support to the Electronics Centre (CEI), which was established in 1982 as a specialised unit to train university staff in the use of electronic equipment. Sida-SAREC support has been the key source of finance. Maintenance is carried out by a team of four technicians. Staff also teach in the Engineering Faculty. CEI has worked on standardisation of equipment, assisted with procurement, set-up, users training (100 technicians have been trained), and manual production (13 manuals have been completed). Its safety centre has been spreading health and safety awareness among users in the university and in industry, supported by Sida-INEC. Revenue generation last year was about \$60,000 from services provided outside the university, and around \$50,000 for services provided to the university, that is not paid. CEI also conducts applied research, such as that on rehabilitation of old equipment.

CEI has gradually improved the service it can provide to the university and elsewhere, but there are some demands that it cannot meet. For example, its calibration equipment is rather weak, and is expensive to install. Other constraints are that there have been continuing difficulties with establishing a procurement system, since some users are resistant to taking advice. Staff retention is also a problem, particularly for those on non-academic scales, since these have little career structure. Skilled staff are leaving.

CIUEM, the computer centre, has been more successful, perhaps because it began before there were too many computers in the university. In 1993, it produced guidelines on procurement of IT equipment, and obtained university approval for its document on maintenance of equipment. CIUEM also obtained approval from some donors that it would be involved in standardisation of procurement, and also obtained agreements with some suppliers for long-term life cycle maintenance agreements. Its support for research includes its national e-mail system, help desks for e-mail users, and recent development of world wide web systems.

Finally, Sida has given strong support to the library information systems, books and periodicals, and to the Historical Archive (see below).

The model developed by the Science Faculty for generic research laboratories could be taken up by other laboratory-based faculties. Maintenance systems at the moment seem to be restricted by the technical staff salary scales being linked to civil service scales, and by the limited income generation in some technician-based areas. The salary scales are the subject of a proposal to government, and the university has begun to address the issue of income-generation in centres and units.

5.5 Library Facilities and Archives

There are 16 Faculty and departmental libraries and a Central Documentation Centre. The collections vary from 9,000 to 25,000 titles with the largest collections being in the Medicine, Arts, Engineering and Economics libraries. There are about 300 scientific journals overall. Total library titles stand at 227,541. Acquisition and cataloguing are done centrally. The faculties submit their needs to the Central Documentation Centre.

The libraries are the major source of books for students. In August 1997 a bookshop will start operating under the World Bank capacity building project. Due to low-level scholarships for purchase of books students will, however, continue to depend on the libraries.

There is no computerised university level library system. The libraries of Agronomy, Economics, Law and Archaeology are, however, computerised. Plans are underway to computerise the Engineering, Veterinary and Medicine libraries.

The Informatics Centre has a plan to computerise the whole university and connect it to the internet. The library is part of this programme. It is envisaged that the whole programme would cost \$5 million and the cost for the library would be approximately \$400,000 to \$450,000 for software, hardware and installation.

There are CD-Rom facilities installed at the Documentation Centre, Faculty of Engineering and Faculty of Agronomy, but only operational in Agronomy.

Trained staff are in very short supply. Only the Director is a trained librarian. One other person has a Diploma. About 70 of the library staff have no formal training in librarianship and about 50% have only up to 8 years of schooling. Currently, however, 16 people are abroad undergoing training for Bachelor's degree and 1 for Masters. Of the 17, 12 are in Brazil, one in Botswana, one in the USA and one in Spain. Seven of the total are Sida-SAREC funded, six are funded by the World Bank capacity building project and the rest by Portugal. Four of the total are women.

The Director of the Documentation Services is leaving at the end of the semester, but we are assured that recruitment of a replacement is almost complete, and that the ordering of books and periodicals will not be affected. Physical infrastructure is a problem since the Faculty libraries do not have enough space for the collections and reading. There is a plan to build a central library but also continue with Faculty libraries for senior students and postgraduate studies. A project proposal for the Central Library was submitted to the European Union in 1987 but no funding has yet been secured.

The possibilities for future Swedish support for libraries are:

- (i) to continue support for acquisition of books and journals as well as training of librarians (Documentation Project);
- (ii) to support the development of a university level library system through computerisation and adoption of new information technologies. This would include:
 - conducting a study to identify the needs for such a system;
 - getting the Informatics Centre to connect the library to the new technologies;
 - training library staff in the skills of using and managing new information technologies. The training would need to be done internally and externally;
- (iii) to address the issue of space, including the idea of the Central Library. The latter would perhaps need a European-wide initiative, from the donor supporters of Mozambique within the European community.

We discussed the Historical Archive in the previous section. Sida support to the Archive might aim at:

- (i) maintaining the current progress in order to continue the valuable and professionally excellent work put into the Archives;
- (ii) staff training. Due to the high attrition rate the Archives are forced to continue to train more people, without whom it would be impossible to operate the Archives;
- (iii) staff remuneration and pay structures, especially for technical staff, need to be reviewed for staff retention purposes;
- (iv) to save the collection from destruction, new physical facilities are needed. The new building is a high priority. Is it in order for UEM's supporting donors, including Sweden, to champion this within the European Commission?;
- (v) equipment, especially specialised equipment for storage of documents, is still required.

Overall, it feels like, although the Archive is a National Depository, it is treated like just another university department. There is a case for the Archive to have a somewhat more autonomous organizational system and funding.

5.6 Financial resources for research

The financial resources available for research in UEM are as follows:

- 1 Sida-SAREC funds that have been focused on five main types of support:
 - (i) starter funds for the early stages of research development, some in the form of Open Funds;

- (ii) project funds, often but not always, linked to postgraduate research training, to equip a research area, usually with one or a few other more junior researchers;
 - (iii) programme funding to support research development in a subject area, e.g. Biology;
 - (iv) support for information infrastructure, research periodicals, information systems, Archives, and associated training;
 - (v) travel funds to allow researchers to attend conferences, and so on.
- 2 Norad has also supported research capacity-building with a one-off 3 million NOK Open Fund grant for beginner research in 1991-94.

These two forms of support have required the development of university-wide decision-making systems. In the case of Sida-SAREC, the Research Director takes responsibility for co-ordinating what has become a biennial research project proposal round and a university-wide proposal is produced, which details each project and programme, and includes short contextual descriptions of Faculty research priorities and background. These are of uneven quality, but quality has increased over time. So far, there has been little attempt within UEM to make comments on the academic quality of proposals. In the case of NORAD, the then Secretary of the Research Council set up a competition where staff made written proposals that were formally evaluated.

Overall, the Sida-SAREC support has been used as a model by UEM to think about and institute research management within the university. There is potential in the next three years to further develop research systems within the university.

- 3 Apart from these sources, there has been some infrastructure support that improves the basic facilities for research, for example, Ford Foundation has supported development of the libraries.
- 4 NUFFIC support for departmental and Faculty strengthening has also included significant funds for research, including for postgraduate research projects.
- 5 Apart from these sources, there have been a range of project funders, including IDRC, Rockefeller, EC, UNICEF, and NORAD.

There are no pigeon-holed funds from government for research. The ways in which government funding can be said to assist research are with staff research and postgraduate study time and with general infrastructure. But this support has gradually lowered in value.

UEM has plans to request a pigeon-holed budget from government that it wants to use to set up an Open Fund for research. Open Funds have had quite a positive history. In the mid-to-late 1980s SAREC Open Funds were used to start research that has led to PhD level research output over the last few years. The NORAD funds also allowed beginner research. Although such funds have required more time to be disbursed, as the decision-making systems were set up, they have had good results. The university plans to set up a fund with government, and it hopes, donor support.

There is, in fact, no government co-ordinating body for research, making difficult any approach to formulate and implement research systems (see section 6). The university is beginning, it seems, to think about how to develop a more coherent research policy.

The university plans for research development clearly require better co-ordination of research that 'does not interfere with the scientific life of the university' as the Director of research put it. The establishment of a Research Committee would be the first step in such a process, which might lead to improvements in ability to monitor and evaluate academic research (see section 6).

5.7 Administrative and management capacities for research

Procurement

The university procurement system has been tightened over the years but still suffers from lack of key technical and administrative skills as well as from complex, though slowly loosening, customs and

foreign exchange regulations and practices. progress chasing is essential at all points and this is extremely time consuming.

The written document on procurement in the university has as many as twenty phases for complex and large purchases and around ten for more simple purchases that require importation. One key bottleneck is that an import license is required for importation of goods. This takes around 1 1/2 months so any further delay can interrupt the procurement process. If the seller knows the university well, smooth relations are normal, but one-off purchases with suppliers used to 60 and 90 day invoice systems have been difficult at times. The Financial Directorate has centralised control of import licenses and financial procedures. It verifies that the procedures are followed before payment is made. The Computer Centre and Electronics Centre are actively involved in the procurement procedures of scientific and computer equipment. Their role is to verify technical specifications and that after-sales service is guaranteed. They also play a role in the standardisation of the equipment purchased. Faculties, however, sometimes purchase without advice. The rest of the procurement process is decentralised to Faculty and unit, but clearly this process requires multiple contact between finance and faculties/units.

We sensed that the procurement systems are still fragile and that their smooth running depends on a small number of senior staff.

Monitoring of Research Funds

Sida-SAREC and Sida core funds are monitored by the central Finance Direction. The Agronomy funds are managed at Faculty level. Each Sida-SAREC project has its own budget head and the accounts are kept up to date centrally by the Finance Director, as are the core funds.

Independent auditing has begun at the university. After suggesting some changes to the audit system, the external auditors, Coopers and Lybrand, are conducting detailed audits unit by unit. Two units (the Computer Centre and the Electronics Centre) have had complete audits.

Agronomy also use an external auditing firm that is charged with training staff as well as monthly financial control. The Faculty would like to continue with this practice and have the Finance Directorate conduct regular auditing missions, but unfortunately they are using a different firm with the danger that parallel systems may emerge. More generally, it seems that some research funds are managed centrally, like Sida-SAREC and Sida core funds, whilst some, like Ford and one-off project funds, are managed at Faculty level.

However, the whole system of financial management is under review. A recent draft document argues that UEM needs a more efficient and facilitative financial management system that better links the central with the Faculty and unit financial offices. Such a system would be a major advance and support for it would assist support for research capacity building.

Capacity for Administration of Research Training

The university staff training system, with its own officer, is well established and works smoothly. There is no question that Sida support over the years, both financial and support towards co-ordinated university-managed systems, has had a major impact on the creation and effectiveness of the structures. Equally, it has been a key priority of university policy, and one part of the strategic plan that has been implemented as planned.

The areas of research training that are less well established are those for technician, and medium and top level administrative and management capacity building for research. It is these that need more support. The person responsible for non-academic staff is the Director of Human Resources.

The person responsible for administration of research is the Director Cientifico, who is responsible for research and academic staff development. As described in section 5.3, these structures are close to working in a smooth and routine manner. The recent agreement with Ford Foundation includes support for administration and management, an annual disbursement, and is closer to the support of Sida in that it includes significant core support towards research capacity building.

It seems obvious, however, that there is a need to strengthen the administration of research by having a clearer system and clearer indication of the levels at which research policy is discussed and agreed and which level takes responsibility for implementation. The university wishes to improve this aspect and we make some proposals in the recommendations on means of improving research administrative capacity, including in academic research evaluation and research management.

5.8 Research Output

The major source of information on research output is the annex to the Annual Report called Relatorio de Investigacao e Extensao which details all research projects located within the university, and gives synoptic information, time scales, local and regional and other external partners, funding sources and names of researchers. In 1995/96 it lists 143 projects (see Table 5.1) and appears to be a most comprehensive guide to research at the university. It also lists extension activities, presentations made, and publications, though publication data is less comprehensive.

There is no doubt that UEM is the only institution in Mozambique with a reasonable base for research. This capacity has been built with considerable enthusiasm from Mozambican staff, most of whom aspire to a PhD research degree. Almost all research depends on external resources, since government has not, as yet, pigeon-holed funds towards research. Sida-SAREC is far and away the major and most consistent supporter of research capacity building (see Table 5.3 for an indication of the significance of project support, on top of which Sida is the most important infrastructure supporter).

Table 5.3 Research projects and researchers, 1995/96

FACULTY	TOTAL		RESEARCHERS INVOLVED	%	SAREC	
	PROJECTS	TEACHERS			Projects	Researchers
Agronomy	37	62	44	71.0%	1	4
Architecture	6	27	7	26.0%	0	0
Science	38	139	49	35.3%	8	19
Law	1	39	1	2.6%	0	0
Economics	2	49	9	18.4%	1	5
Engineering	4	125	6	4.8%	3	4
Arts	10	69	23	33.3%	5	12
Medicine	10	95	14	14.7%	3	7
Veterinary	10	46	12	26.0%	1	1
CIUEM	4	n.a.	8		1	1
A.H.	4	n.a.	10		1	5

In the previous section we have reported on outcomes of research support regarding staff development (section 5.1), databases, library facilities and Archives (section 5.5), scientific equipment (section 5.4), and research management (section 5.7). In this section we report on outcomes of research training and on research publications, referring especially to the impact of Sida support.

Research Training

Table 5.4 illustrates the gradual acceleration of doctorates produced. In general, Sida-SAREC support has focused on capacity-building from a low base. The most concrete indicator of this support is that 13 Mozambican staff reached Masters equivalent level between 1992 and the present. Six Mozambican sandwich students, and one full-timer funded by Sida core funds have obtained PhDs, most completing in the last eighteen months, the first of a significant group who began

research in the early 1990s. Another six Sida supported PhDs are expected within the next twelve months. A further six are in the middle of their PhDs.

Table 5.4 PhDs completed of UEM Mozambican staff, 1975-1991

	PhDs completed 1975-91	1992-Present	Sida supported
Sandwich	6	14	6
Full-Time	14	11	1
TOTAL	20	25	7

Note: Since 1992, 13 staff have obtained Masters, or Masters equivalent, as a result of Sida-SAREC supported training.

The success rate of Mozambicans who undertake postgraduate research degrees is, we believe, close to 100%. At one level, this can be seen as the result of the long experience of most candidates. Nevertheless, this reflects well on the university's staff development process, the good quality of these UEM graduates, and on the generally good support that is given by UEM and donors.

Publication Output

The data on research output are less easy to obtain and judge. The university is making a concerted effort to gather this information for its Annual Report exercise, and some faculties gather it as a matter of course for their annual reports. However, it is clear that output goes unreported.

We analysed what information was available within the university. We also searched international databases for citations of publications from Mozambican institutions. It was this search that alerted us to material not reported in UEM Annual Reports.

The international citation databases (Science Citation Index, Current Contents, Geobase, Georef, Sociofile, Medline and Biological Abstracts) captured 45 publications from Mozambique in the ten year period 1987-96 (Table 5.5). There are interesting conclusions even from this admittedly small group of publications.

- (i) In all except one publication, the Mozambique-based authors were from the university. The exception was from the Ministry of Health Epidemiology Unit;
- (ii) Of the 45, eight publications had no Mozambican authors, though half of these were in the period before 1990;
- (iii) There is a noticeable increase in tempo of publication: 11 in the first five year period (7 with Mozambican authors); 34 since 1992 (30 with Mozambican authors);
- (iv) The predominant publishers are the Science and Medical Faculties, though the Veterinary Faculty has been publishing since 1995. The citation indices are not a good way of measuring internationally recognised research in Arts and Social Science;
- (v) The vast majority of publications (43) have at least one non-Mozambican author. This perhaps reflects the 'need to publish' culture of international science, but it does suggest that more could be published if the university encourages it.

Table 5.5 Citations to Mozambican publications.

	1987–91	1992–96	Total
Agronomy	0	0	0
Biology	3	7	10
Physics	1	1	2
Geology	1	0	1
Maths	1	0	1
Chemistry	1	0	1
Engineering	1	2	3
Medicine	1	17	18
Veterinary	1	5	6
Social CEA	1	2	3
TOTAL	11	34	45

Our conclusions from this brief survey of internationally recognised Mozambican research suggest a growing ability to publish and growing quantity of publishable research.

It also suggests that more emphasis might be given to ensure that Mozambican researchers, particularly those with recent PhD theses, are encouraged to publish. This may require translation help, establishment of international contacts, and material incentives to give papers at international conferences and publish in international journals.

The results of table 5.6 suggest that the university needs to redouble its efforts to gather information on publications and to encourage publication. There is no question that many times more local presentations and reports are produced than are reported here. Also, there is no doubt that more international conference presentations have been given and book chapters written. The international journal and conference presentations correspond closer to actual production, though we know there to be more than are reported in the UEM Annual Report.

Nevertheless, the available data suggest a growing ability to publish and considerable potential to extend academic output, both in quantity and quality, in the next few years.

Table 5.6 Published Output from UEM, 1995 and 1996

		Published Output 1995 and 1996				
		Chapters	Refereed Paper/Conf. papers	Int. Conf Presentation	Non-refereed papers	In land/local Reports/R
Agronomy		1	2	12	4	24
Architecture		0	0	0	0	0
Science	Biology		5	8		9
	Physics		4	4	0	6
	Geology		1			
	Maths			4		3
	Chemistry					
Law						7
Economics						
Engineering		n. a				
Arts						
	Anthropology & Arch.					
	Geography	2		2		
	History					
	Linguistics					
Med			7	1		4
Vet			6	1		6
CEA		5	4	6		4
AH		2	4	6		4

(Note. incomplete)

6 Institutional Plans for Research

6.1 UEM's institutional plans

At present, administration of research and research training seem to be handled at various levels.

For research training the systems are well established. Departments put forward proposals from those staff who fit the criteria for postgraduate training, using the regulations for academic career. These include, for example, a minimum of two years teaching after licenciatura. Proposals go to faculty level and then get worked up for university level decisions. At university level, there is a person, Arlindo Siteo, responsible for academic staff development. Final PhD plans get formally agreed within Academic Council. The problem until recently has been the lack of scholarship funding, resulting in big backlogs of qualified staff. But the number of those in training is rising rapidly.

For research projects, the system seems to be:

- (i) for research funds that are handled centrally, like Sida-SAREC, university level organisms handle funds, responding to requests from grant holders.

Departments submit proposals to the Faculty Council which makes recommendations to the university Academic Council, which gives approval. It is not clear, however, whether these two organisms discuss only the financial and administrative aspects of the proposals, or also policy, guideline monitoring or dissemination of research.
- (ii) there is a meeting of Sub-Deans for Research that meets once per semester under the chair of the Director of Research. This meeting discusses a wide range of issues. A recent meeting discussed the institutionalisation of research, database development from research results, and how to improve information in units about funding sources for research. But it is not a formal committee of Academic Council.
- (iii) for research funds at faculty level, it seems that faculties have the autonomy to handle the administration at faculty level. For example, apparently Ford Foundation funds are handled at faculty level, not via the financial directorate.
- (iv) some funds are handled outside Mozambique, such as the NUFFIC funding. It is not clear how the university gauges priorities for these funds.

For the future, it seems obvious that there is a need to strengthen the administration of research by having a clearer system with guidelines and criteria for research support, stronger facilitation of units to gather outside research funds, and some academic monitoring systems for ongoing research.

The university is planning to establish the Research Committee (Conselho Cientifico) so that there is a formal body to co-ordinate research. It also wishes to establish a research Open Fund which will generate a decision-making process and academic monitoring systems. Sida-SAREC might consider supporting the university's moves over the next three years.

Our meeting with Sub-Deans for research, the Research Director, and Vice-Rector (Academic) generated another set of priorities, apart from those above. These were, the continued need for postgraduate research training, particularly sandwich training, the uneven ability of the faculties to respond with local postgraduate programmes, the need to encourage those returning with PhDs, and the need to strengthen faculty research management capability. These latter issues are dealt with in other sections of this report.

6.2 UEM and National Research Policy

Although UEM has easily the biggest research base within Mozambique, there are other research institutes (see Olsson 1995). At present, there is no national organ with responsibility to formulate research policy, or to set agendas for research. As we describe above, the university has tried to drive

its research development in function of national priorities. Most other research institutes are directly under ministries. However, it is not clear that the institutes receive guidelines on research priorities. The funding they receive does not allow research to be conducted and institutes need to obtain donor funding for their research activities. The salary situation in the research institutes is worse than in the university, since salaries there are still linked to civil service systems.

The government has mentioned science and technology as a priority. There was a Presidential Forum on Science and Technology in 1994. The government has signed the agreement that governments in Africa should give a certain percentage of GDP to research but this has not as yet been implemented.

Recently, a group has been set up, made up of the directors of most research institutes, the Standards and Quality Institute, and some companies, like the Mozambican airline and telecommunications companies. The university is also represented by a biologist. They will propose that the group becomes a National Commission for Science and Technology, that will begin to develop research policy and act as a group to push for research funding. The group has an Executive Committee and is working on a proposal. It has received some small support from UN Economic Commission for Africa. Unresolved questions are under which ministry to put the Commission. One possibility is the Prime Minister's office.

The group has been meeting since 1994. The evaluation team met the Chair of the Executive Committee from the university, and its Secretary, from the Standards Institute.

Some small support would certainly assist the process of development of this representative group.

7. Department Strengthening in the Faculty of Agronomy

7.1 Background

Swedish support to The Faculty of Agronomy and Forestry Engineering started in 1993 as part of Sida development assistance to the agriculture sector in Mozambique. This assistance was originally channelled through the Ministry of Agriculture.

The implementation of this project has been delayed due to some problems related to the use of funds by one of the Swedish supported projects in The Ministry of Agriculture, namely PESU (Emergency Seed and Tools Programme). As a consequence the entire Sida support to the Agriculture sector, including the support to FAFE, was frozen for about 16 months, until matters were completely clarified. This freezing period affected dramatically the implementation of the FAFE project, particularly the areas of staff development and teachers recruitment.

It should be noted that, in spite the freezing of funds, the Agriculture Engineering component of FAFE project, has been able to achieve some advances, notably in staff training of one MSc and to maintain to satisfactorily levels the required assistance for teaching. Another important progress achieved by FAFE in this project has been in the area of finance administration, whereby an independent accounting company, Eureka, has been hired to train the faculty staff and to be responsible (while training is under way) for the accounts.

In the meantime the PESU issue was resolved to the satisfaction of all parts involved and co-operation has resumed to normal. Sida has decided to remove the support to FAFE from the agriculture sector to become part of the support to UEM.

It is the mission assessment that, in spite of the extended period that funds were frozen, the resources available to the project were used properly.

7.2 Future Sida support to FAFE

FAFE is aiming at a Sida supported project to cover mainly:

- (i) Staff development;
- (ii) Teaching assistance;
- (iii) Research development;
- (iv) Support to capacity building for financial management and administration;
- (v) Rehabilitation of infrastructures, particularly teaching labs and facilities.

The support in the areas of staff development, teaching assistance and research development are to be focused on Agriculture Engineering and Economics leading to the establishment of full fledged departments. The establishment of Post Graduating training is also envisaged. The latter is anticipated to be done through multi-donor contribution including Sida.

Future collaboration between the Faculty of Agriculture at UEM and SLU (Swedish University of Agricultural Sciences) was carefully penetrated at a series of contacts between the two faculties with visits from Maputo to Uppsala and vice versa. The proposed collaboration is outlined in a project document dated December 1996.

Two specific areas of support are identified, Agricultural Economics and Agricultural Engineering, and the period of support is five years and extends up to the end of 2001. The development objective was stated as "Sustainable increase in farm incomes through provision of sufficient and relevant research results and qualified staff in the fields of agricultural economics and agricultural

engineering” with the specific project objectives of “increased research capability” and “increased number of individuals with relevant training in the two fields”.

Seven specific outputs were foreseen:

1. “improvement of the relevance and effectiveness of the regular educational programme for these subjects”;
2. “development and upgrading of programmes to satisfy market demands, to serve as preparation for MSc studies and as future specialisation option at FAFE (Faculty of Agronomy and Forestry Engineering)”;
3. “operation of sandwich MSc programmes”;
4. “establishment of team research programmes”;
5. “development of links to international networks”;
6. “provision of equipment, reference literature etc.”;
7. “promotion of organisational structure, institutional procedures, processes and routines”.

The objectives are very relevant and project activities should be initiated as soon as possible and pursued with vigour in order not to experience any further delays.

The assessment in the project document is that the capacity building will be a difficult and tedious process and, in particular, the establishment of a staff within the Faculty that is mainly of Mozambican origin. However, the specific assessment of the developments by this evaluation mission are somewhat more optimistic for the following reasons:

- the increased number of graduates from the Faculty should make it easier for UEM to recruit qualified staff particularly if, as envisaged in the project document, it will be possible for a majority of the staff members to get further training up to and beyond the level of MSc;
- there are signs, as indicated by other government bodies, that all graduates are not immediately absorbed by the labour market, thus giving more possibilities for the Faculty to recruit the best graduates. There is, however, a budget limitation on further staff recruitment.

There might be reasons, with reference to what is said above, to make certain changes in the emphasis of some of the components of the project proposal. While the need for institutional support at present is obvious, it should be possible to move more quickly into the stage of research collaboration with a substantial number of staff members participating in sandwich training at least up to the MSc degree. To be able to reach the larger numbers of qualified staff, that is required in the future, it might be necessary for FAFE to reach out to a number of sister faculties also in the region to establish a network of research collaboration.

When this network of collaborating partners is established and there is a reasonably large national staff within the Faculty, UEM should consider the possibility of establishing its own post graduate programme. Such a programme could continue to build on research collaboration of the sandwich model, but the time spent abroad for the MSc or PhD students could over a five years period successively to be reduced. To guarantee the quality of the graduates from this new programme (post-graduate) a system of external examiners should be introduced. It is believed that both Agricultural Economics and Agricultural Engineering would be in a position to launch post-graduate programmes at about the same time. In Agricultural Economics, the programme could be integrated with the African Economic Research Consortium Masters programmes.

The introduction of such new and extensive programmes at UEM should be done only after external support, has been guaranteed for a rather long time, up to perhaps ten years. With the good reputation of sustained support from Sida it would seem natural for UEM to take up such negotiations with their representatives and with the Swedish Embassy.

The institutional collaboration that is envisaged in the project document requires a commitment on the part of SLU that might be difficult to meet since it is the only Faculty of Agriculture in Sweden. It is quite obvious that expatriate staff with professorial competence might be available in the region or elsewhere, while it might be difficult to find Swedish staff with proper competence in Agriculture and with ability to teach in Portuguese. It should also be remembered that staff members recruited by UEM is much less expensive than recruitment of Swedish staff arranged by SLU. At the same time, it must be recognised that UEM has been very successful with its recruitment of expatriate staff whenever it has not been possible to employ nationals with required competence. The arrangement proposed here would mean a higher cost effectiveness, because staff at professorial level from the region can be recruited at much lower cost.

With these kinds of arrangements - when UEM represented by FAFE is solely responsible for the operation of the whole programme with little or no input from any competent faculty in Sweden - questions may be asked about the “academic monitoring” of the programmes that are being financed by the Swedish Government.

It is important at this point to make it clear that the “academic monitoring” should be taken to mean the “best use of available funds as assessed by representative(s) of a competent faculty” and should not be mixed up with financial auditing, which requires a completely different follow up and which is being discussed elsewhere.

A way to guarantee a proper academic follow up or monitoring would be to select the Faculty of Agriculture at SLU as the Academic Monitoring Agency with responsibility to review the progress of the programme at FAFE at regular intervals. SLU could at the same time be the partner with which FAFE would discuss adjustments of the programme during its life time. It is after all a five year programme and it might be difficult at this time to foresee the very best use of the funds throughout the life time of the programme. In this way SLU would be closely related with the programme and could from time to time also step in with direct support or, if necessary, particular back stopping for the programme perhaps in terms of future research collaboration.

It is important that the suggested Academic Monitoring by SLU should not be taken to mean that UEM would need prior approval by SLU to execute the different components of the project. However, the monitoring reports should be submitted to both UEM and to Sida for their joint assessment and if necessary intervention and decision in case there would be suggestions in the SLU reports that available resources could be used in a more efficient way.

8 Wider Institutional Support to UEM through Sida core funding

8.1 History and philosophy of core support

Sida has supported UEM with core funding over two, three year periods (First Accord UEM-ASDI 1991-94; Specific Agreement 1994-95 to 1996-97). The first accord agreed a contribution of 12.5m SEK in 1991/92, rising to 13m SEK in 1992/93 and 1993/94. Apparently just two payments were made totalling 25.15m SEK. The second accord agreed 8m SEK for each for three years. It is not clear whether any extra support was given when the accord was extended through the second half of 1997 (see Table 3.9).

There seem to have been two influences that led to this flexible support: A Minimum Requirements Study (Wohlgemuth, 1991) and the university's Present and Perspectives document. In the first, Lennart Wohlgemuth argued that the war in Mozambique, the economic crisis, and the Economic Rehabilitation Programme had severely affected the education sector, and led to significant deterioration of the university. He catalogued the major difficulties: the lack of funds for materials, consumables, books and equipment; the lack of investment resources; student scholarship needs; and staff salaries and conditions. He chronicled the university's attempts to plan for the future, that led to Present and Perspectives, and argued that UEM would require expanded external support to implement it. He made clear that such support needed to be flexible core support.

He went on to estimate the basic 'minimum requirements for the efficient operation of the university at the present enrolment rate', then 3,300 students. At the time, for example, the monthly salary of a professor was \$276. (It is \$310 in 1997). His estimation suggested that the university budget of \$21m in 1991, needed to be \$29 million, showing a particularly massive shortfall on recurrent costs and cost of meeting basic student needs.

Simultaneously to Wohlgemuth's report, the university Present and Perspectives document, after summarising the strategic objectives of UEM (see page 8-9), went on to detail the basic requirement of the university (see list on Table 8.1).

Table 8.1 Items listed by Wohlgemuth as requiring core support, and Sida response

Recurrent	Sida response
Salaries of Mozambican academic staff	no
Salaries of Technical and Administrative staff	no
Technical Assistance (that is, expatriate staff)	no
Scholarships (for students)	yes
Training of Academic Staff	yes
Research Funds	yes
Book Acquisition Fund (includes teaching manuals	yes
Maintenance of equipment and installations supplies (particularly imported ones)	yes
Others (utilities, fuel, oil, etc.)	yes
Investment	
Construction	yes
Equipment	no
University bookstore	yes

Sida, through its then Education Division, agreed to support the university;

- (i) as a means of assisting the university in its plans to confront its crisis;
- (ii) to support central costs of the university as it attempted to confront the dominance of donor tied support; and
- (iii) as a means of assisting the initiative of the Rector and university central governing councils. In our discussions with Sida, they emphasise the flexible nature of this tranche of funding, though suggesting that it was not meant for salary support or new construction.

8.2 Use and usefulness of core funds

The first agreement, in August 1991, was included in general Sida support to Mozambique's education sector. The detailed associated proposal from UEM, made in late 1990 to Sida, made requests for funding towards student scholarships, research support, academic staff training, student textbooks and manuals, equipment maintenance and equipment purchase, all key items in the strategic plan. The UEM Annual Report's Financial Statements for 1992 and 1993. show total disbursement to end-1992 of 12.65m SEK, including 1.89m SEK towards a female Hall of Residence (see Table 8.2). It should be noted that UEM operates its budgeting system according to the calendar year (January to December). This partially accounts for the differences between grant and disbursement amounts. In 1993 a further 9.74m SEK was disbursed (Table 8.3). That appears to be the total disbursement of the first agreement.

Table 8.2 Disbursement of SIDA funds 1992

Description	Income (SEK)	US \$ equivalent (on 30 Nov)	Disbursements (SEK)	US \$ equivalent (on 30 Nov)
Donor Grant	12152000	\$1,753,998		
Expenditure				
Supplement for scholarship grants of UEM students			1861635	\$268,705
Development of qualifications of Mozambican teaching staff			982145	\$141,761
Development of research			1220400	\$176,150
Books and basic manuals			860382	\$124,186
Reproducing support texts			830296	\$119,843
Reference literature for graduates			273740	\$39,511
Maintenance of premises			233507	\$33,704
Maintenance of scientific equipment			32534	\$4,696
Materials for the teaching programme			2666645	\$384,899
Training of technical - administrative staff			85493	\$12,340
Administrative expenses			1718963	\$248,112
Total for running costs			10765740	\$1,553,908
Donor Grant for residences	5000000	721,691	1885990	27,221
TOTAL	17152000	2,475,689	12651730	1,826,129

SEK = Swedish crowns, the original currency of the grant.

Table 8.3 Disbursement of SIDA Funds 1993

DESCRIPTION	INCOMES (SEK)	DISBURSEMENTS* (SEK)
DONOR'S GRANT	8.000.000.00	
SOCIAL SUPPORT PROGRAMME		1.284.913.00
TEACHING/INVESTMENT/EXTENSION PROGRAMME		2.825.931.00
PROGRAMME OF GENERAL SERVICES AND ADMINISTRATION		5.625.110.00
TOTAL	8.000.000.00	9.735.954.00

The second agreement (1994/95 to 1996/97) had similar objectives, to support the UEM strategic plan. The support was 24m SEK, in three equal tranches, to be disbursed once per year after a year plan of operation had been approved by Sida. Funds were not to be used for local salaries and building construction. Table 8.4 details the proposal made over the three years.

Table 8.4 Proposals to Sida for use of core funding 1994/95 to 1996/97 (SEK)

	1994/95	1995/96	1996/97
Scholarship Fund	1,000,000	1,000,000	1,000,000
Training academic and non-academic staff	800,000	800,000	700,000
Books and journals	2,000,000	2,000,000	2,000,000
Consumables and spare parts	3,000,000	3,000,000	3,000,000
E-mail system	800,000	800,000	700,000
Administration	400,000	400,000	300,000
Programme evaluation	—	—	300,000
TOTAL	8,000,000	8,000,000	8,000,000

Actual expenditure is reported in Annual Reports. That for 1995/96 details, for example, five academic and one non-academic staff member undertaking postgraduate studies, the total number of books bought, student scholars supported (900 last year), and so on. The internet support was for one work-station and modem in each unit and the creation of an open space in CIUEM for staff and students to read messages. Around 1,300 now read their messages each day. Total disbursement in that year was 6,755,448 SEK, with biggest shortfalls in consumables, administration and the internet system. Of the academic staff supported for training, one completed his PhD in 1997 and three others are expected during this year.

Of this support, 5.3m SEK (that for books and consumables) is disbursed according to faculty bids and requests. Each unit is given a budget based on its size and activity - number of students and size of laboratory space. For example the largest faculties received around \$70,000 US for consumables in 1996/97. This amount, though relatively small for large faculties like Engineering or Science, amounts to around the same amount as the government budgetary support for consumables.

In our discussions with the faculties, we were able to ascertain that they had full control over their tranches, and that they just made lists of their needs for procurement to be arranged. Items purchased varied from plastic gloves in Medicine, chemicals in Science, to improved teaching rooms in many faculties. In our discussions with university senior management, they suggested that the Sida core support is 'the best articulated programme between centre and faculties', and 'funds are available almost immediately'. The university believes that the support system can be used as a model of

centre-faculty relationships and this year they are moving a little further forward in asking units to make more detailed assessments of their recurrent and maintenance cost needs.

8.3 Overall assessment of core fund philosophy

The Sida core funds have had a considerable impact in UEM, in their own right as flexible and available funds, and in their impact on institutional development - on centre/faculty linkage, and on the ability of the central administration to keep the pressure on government and donors for less tied and more autonomous means of support.

The support has allowed the university to build and consolidate its scholarship programme, for instance, and to lever more government funding for student nutrition. It has allowed some basic minimum of student texts to be available in the libraries, it has kept teaching facilities at some kind of minimum, assisted with internet development, and allowed the construction of a women's hall of residence.

8.4 Co-ordination of Donors

There is no question that co-ordination of donors and the tied nature of their support continues to constrain the university. There is little evidence that donors have allowed themselves to be co-ordinated. The study of co-ordination made in 1994 (Wield, 1995) still seems to describe the situation where:

- (i) Some donors/funders allow the UEM to manage the funds and support. These include the government, Sida, NORAD, and Ford). There are differing conditions, reporting requirements, modes of disbursement, and so on;
- (ii) One funder, the World Bank, allows UEM to manage funds, but with a parallel management structure. For example, the Capacity Building Project appears to be completely separate from the relevant university directorates (mostly the Gabinete for University Installations-GIU) and university staff assigned to the Capacity Building project have different salaries. At the same time, GIU does not have enough capacity to cope with present maintenance needs;
- (iii) Other funders, some very significant with long-term commitment to UEM, do not give UEM direct management. The Italian Government support, for example, seems to be constrained by the Italian university collaboration agreement, so that the equivalent of 25 full-time Italian expatriate staff are sent to teach in UEM each year, usually for short periods of time that do not correspond to university terms, thus entailing that the university change its teaching profile to suit expatriate staff availability. The Italian Embassy agrees that this is not ideal and is acting to change some elements, as in its support to Economics. But it is constrained, it says, by overall Italian policy.

Similarly, the huge Netherlands government support, has a series of different conditionalities, depending on whether it is university-to-university support (NUFFIC) or technical assistance more generally. Overall, much of this support seems to entail classic full expatriate contracts, each linked to a Mozambican counterpart. This type of support has worked in some areas, but ties UEM in some ways to conditions it cannot really meet, particularly the need to build capacity around the technical assistance support. The proposal of the Development Co-operation Minister, Jan Pronk (1995) that the asymmetry in the north-south relations in NUFFIC programmes needs addressing, does not seem to have been implemented. Thus the proposals from southern universities, including UEM, have not been integrated. At the same time, a recent evaluation of the NUFFIC MHO programme in UEM seems not to have knowledge of this debate on asymmetry, rather blaming limited involvement and feeling of ownership on the Mozambican side.

UEM continues to press for more flexibility. Its fragile financial situation does not give it as strong a position as required, however. Strong and historically important donors, can, it seems, pull back support, without really addressing the key issues of tied models of support and northern aid

management. The Netherlands Embassy representative suggested that there are some possibilities to improve on this situation.

The university has recently signed an agreement with the Ford Foundation which has significant core support, including infrastructure, faculty and central institutional development. It is also talking to other agencies, including to one for support towards the strategic plan.

It is our strong view that administration of Sida core support has, slowly but surely, led to improved decision-making systems linking central administration to faculties. The university appreciates this core support, and uses its implementation as a model for its own internal development. The core support 'model' contrasts with models of parallel management systems and the technical assistance model of expatriate support/Mozambican counterpart. As a model, it compares well, we believe in its impact and outcomes.

8.5 Annual Reports as simple reporting mechanisms

One condition for the core support was that UEM produced an overall report for the institution that included comprehensive analysis of the implementation of university plans and a financial statement.

The Annual Report system began in 1992 when a report for the year 1991/92 was produced for the Second Annual Consultative Meeting. Since then it has been produced annually. The latest edition for 1995/96 forms the basis of much of our statistical information. In general, the quality of information has increased each year, with much improved annexes on research activity and on annual plans. The Annual Report now forms a good basis for annual assessment of areas such as overall development of the institution, including staff development, installations, student support, gender balance, quality of student intake and graduation output, and there is an honest and objective feel to it. It addresses the key problems of the institution.

The financial reporting system and international co-operation report is still not operating as a comprehensive report of the finance. In the first years, 1991 and 1992, estimates were made of donor support from those donors who do not give UEM control over funds, and accounts were published for the key donors that did give such control. In 1995/96, a section of the general Annual Report gave financial data on government funds and some key donor funds, those where UEM had control. But it was not possible from the Annual Report to get an overall feel for the UEM budget, divided by recurrent and investment expenditure, government and donor. Thus, it is not possible to estimate the relative expenditure on investment and its possible future maintenance costs. The Sida core funding is separately accounted, so it is hard to see, from the annual reports, how far it contributes to recurrent costs item by item. The World Bank Capacity Building Funds are reported on in the annual report.

Because in recent Annual Reports there are no estimates of support from donors that do not give management responsibility to UEM, it is not possible to estimate how expensive the large expatriate presence is, making it hard to discuss how, if donors agreed, it could be used to support overall institutional development and core support.

Improving financial and international co-operation reporting, however, is not simply a technocratic exercise of doing the sums. The sums exist, for those funds where UEM has control, and the evaluation team were able to directly access and work with them. Neither is it simply a question of improving the audit systems and routines, which is slowly happening at UEM. The more important problem is supporting and allowing UEM to develop its systems with more flexibility. Unfortunately, the funding from most donors is as tied now as it was in 1991.

We believe that the university is moving, and plans to move more rapidly from 1998, to strengthen its overall management capability. But it is very easy to weaken this capability by developing parallel structures, faculty systems that do not mesh well and allow overall transparency, and by donors continued use of parallel fund management and reporting systems.

The university can strengthen its position by strengthening its own systems. In particular, it might consider whether a strong financial management committee is needed that gives muscle to discussions with donors on increased flexible funding. Having strong 'shadows' to co-ordinate thinking on each key donor (as the Research Director has for Sida-SAREC research support) could also assist these discussions. However, the university, if it implemented this kind of system, would need to think how to avoid the proliferation of parallel systems.

8.6 Implementation of Present and Perspectives and the future

With respect to the university strategic plan then, Sida core funds have assisted implementation or partial implementation of more than half of the strategic objectives: including the egalitarian element of admissions policy from all regions of the country; improvement of student's quality of life; improving teaching and learning; and academic postgraduate training.

There are other aspects of the strategic plan that have not been so well supported with use of Sida core funds.

The first could not anyway have been supported by the terms of the agreement. As described earlier, the issue of staff retention is just as much a problem in 1997 as it was in 1991. That well qualified academic, administrative and technical staff remain in the university depends on a number of conditions, all important, but none able by themselves to stop future loss of haemorrhaging of staff. It remains true, for instance, that there is status in working for the university. Also, the vast majority of staff are awaiting or undergoing postgraduate training which is a tremendous incentive to stay with the university. It is also true that the relative flexibility of the university allows academic staff to work outside, perhaps 75% of their time.

The university has proposed a new salary structure which would give material incentives to academics who are committed to full-time work at the university. This includes rewards for research activity, teaching and diploma supervision. It has also proposed de-linking administrative and technical staff salaries from the civil service rates to stop the growing leakage to the expanding private sector. The government seems to be responding supportively, but wants clearer plans about how it will improve overall sustainability. The university, in turn, is discussing how to improve its services to national economy and society.

This is a sensitive issue which the university and government will need to resolve themselves. The evaluation team suggests that, in some restricted circumstances, temporary salary support may be sensible, if in line with UEM/government agreement. An example might be material incentives for local staff who supervise post-graduate training as it develops, or supervise Mozambicans PhDs candidates whether they are registered. Another example would be where overall salary savings on expatriate staff could be made by employing qualified Mozambicans.

A further key issue for the future is developing a stable career environment for returning PhD level academic staff. There is no doubt, we believe, that these staff are in most danger of leaving the university just at the point when they become potentially most useful to the institution. We discuss this issue in recommendations and believe it needs support in the next Sida agreement.

A second strategic objective that has only partially been supported by Sida and other agencies is the institutional reinforcement of faculties. Mozambican academic staff are beginning to return from postgraduate studies, and there has been investment in some faculty infrastructure. But one area of continuing weakness is administrative and financial capability in faculties, which is, as elsewhere in the university, extremely weak.

More generally, other strategic objectives have received little support from any funding source. One such objective, highly relevant to Sida given its long-term support to the Historical Archive, is the inability of the university, as yet, to obtain support for a new building for the Archive to replace its very inadequate premises.

There has been little support given to implement extension and consultancy activities and to keep it within the university.

Finally not much support has been used for strengthening the overall management and administration capability at UEM.

Most of these areas, where implementation of Present and Perspectives has been less comprehensive, are priorities for the 'Rethinking the University' process which is now underway. We report on this process in section 9.

9 Future Directions

According to the Rector, the future direction of the university will be shaped by two major forces. These are:

- (i) The termination of the first UEM strategic plan, which has achieved most of its goals; and
- (ii) The 'historical moment' in Mozambique, and how the university should respond to the recent large transformations in society.

The issue for the process of 'rethinking the university' and the new strategic plan is how UEM can best serve and contribute to these transformations - to the end of the century; and into the next century.

9.1 Growth of the University

In 1995, UEM prepared a document outlining its plans for expansion in the next decade (Perspectives de Expansao da UEM, 1995). This projected, as in the 1991 strategic plan, an expansion of student population up to 10,000. The growth would be achieved by increasing the number of new entrants to the university, reducing the number of years it presently takes students to complete their studies, by introducing distance education, post-graduate courses, curriculum reform that introduces more flexible teaching systems, opening new courses/faculties and expanding some of the existing faculties (including new courses).

Areas due for expansion are Agronomy (with new courses and more students in existing courses), Science (as the new faculty buildings are completed), Social Science, Informatics, and Education. The expansion plans of UEM will be updated following the ongoing revision of the strategic plan.

The major constraints in the plan, according to UEM, will be the required expansion in infrastructure and equipment. The required expansion in academic staff is not anticipated to be a problem given the rhythm at which UEM is recruiting and developing its staff, although this begs the question of staff retention and payment. A further constraint then, is how the university can expand its revenue base and improve its sustainability. At the moment, for instance, the university fees are around \$100 per annum as compared to \$250 a month in private institutions.

More residential places are planned. Places will increase from 1,000 to 1,500 in 1999. There are plans to focus scholarship support more strongly on disadvantaged groups, particularly the regionally disadvantaged and women. Social support for students at present totals 25% of the university budget and the university is considering how best to separate out this (non-academic) part of its activities.

9.2 University Policy and Higher Education Policy - Some Recent Issues

This section aims to give a flavour of the issues affecting strategic thinking at the university as presented to us by UEM and others.

A Presidential Commission on Higher Education is sitting at this moment, and UEM has representation on it. It is due to report to the Council of Ministers this year and will look at overall policy for higher education in Mozambique in the light of the recent rapid political, social and economic changes. The issues were summed up for us by the Rector as: the consolidation of peace and development of a peace culture; democratisation of institutions; and development of a market economy.

The university has presented proposals to government to increase its autonomy a little. Already, it is autonomous with regard to pedagogical issues and academic direction. It has asked for more autonomy with respect to finance and its assets. For example, it wants to use the government budget

to support research, which at present it cannot do. It also wishes to de-link administrative and technical staff salaries from the civil service rates.

Internally then, it wishes to address the tensions arising from the uneven advances made between academic staff development and incentives and the status of administrative and managerial staff in the university. This includes technically skilled, librarian staff and future staff to strengthen faculty, research, and other central management.

The university has written draft documents on such issues as improvement of the relationship centre-faculty on annual budget planning and financial management. The emphasis is on improving the centre systems so that they service the individual units. The thinking encompasses not just the relationship centre-faculties and centre-projects and programmes, but also includes all significant donor funded projects.

Another university priority is how to expand extension activities. The thinking here is not just in terms of expanding direct income-generation. It is also about how to encourage staff to join together, inside the university, to build joint income-generating activities. Thinking is also associated with pressure from government for the university to show it is giving value for money and has the competence to deliver good quality services and graduates. The UEM would wish that the government, and other institutions, turn to the university as a local source for paid services and expertise.

9.3 University Priorities

At our final meeting with the senior management team of the university, the Rector summarised the key issues for the process of 'rethinking the university' as:

- (i) consolidating the transformation of the university;
- (ii) staff retention;
- (iii) quality of teaching and research;
- (iv) the interface between UEM and the economy and productive sectors;
- (v) moving international co-operation towards capacity building;
- (vi) administrative and management development.

Within these priority areas, the Rector detailed a diverse range of issues that require support, as follows:

- (i) Priority to research and its application to national institutions of development and to reflection and promotion of debate on transformation. Within this area, the university emphasised postgraduate training, including expanding such training within the region, and within UEM. It also emphasised the university's plan to establish its own Open Fund, with support from donors and government, with criteria that would include support for post-doctoral research;
- (ii) The better integration of academic staff into academic life. This includes full-time involvement in the university, and improved use of PhD qualified staff, the subject of a university proposal to government, but also requiring special incentives to increase research output and local research supervision;
- (iii) Priority to management and administration - 'how to get the machine to work' - both in the Rectory and in faculties and units. The university is planning to develop a system that links the central units to the faculties. The centre needs to be clear what its responsibilities are - to facilitate and support, to audit, and to monitor and make sure that programmes are completed to standard;
- (iv) The university wants to introduce evaluations of the different types of doctoral programme - the sandwich model and the full-time model, better to understand the future mix;

- (v) How to respond to changing society and how to improve links. This entails curriculum revision, broader access, and better extension;
- (vi) How to deal with the generally low school level? How to avoid that the low levels in secondary school do not translate to major failures and delays in university education? How to improve the link school/university?
- (vii) How to be more open to women, to move from supporting equal access to special programmes of encouragement and support. For instance, should the university be offering lower grade university entry to women since women perform better than the men when they arrive.
- (viii) The new strategic plan will serve as the guide for the university to promote its needs, to continue the pressure that the university co-ordinate donors, and to attract new donors.

9.4 Organisation of Sida Support

At our final meeting with the university top management team, it was pointed out that the strategic document *Present and Perspectives* gave the university a means of thinking and planning and working for the future. It allowed some thinking also about how to co-ordinate donor support. The impact of Swedish support, it was said, has been its strongly flexible and co-operative form.

It was also emphasised that the multiple objectives of the support should be preserved, for instance, the need for both core support, and for research and staff development support. The proposal to co-ordinate Swedish support into one three-year agreement was warmly welcomed.

10 Conclusions and Recommendations

10.1 Conclusions

This evaluation was established to report on Sida support to Eduardo Mondlane University during the period 1992-1996, focusing on the effects and results of Swedish support in bringing about change in response to the university strategy plan *Present and Perspectives*. The evaluation team studied how UEM and Sida might better organise their activities for more efficient collaboration regarding support for research, research training and institutional development of UEM. The evaluation team was asked to discuss how to build more comprehensive Swedish support in the new Sida from 1st January 1998. We took this to mean how Swedish support can better support academic development that builds up UEM's research base and its overall institutional development through relatively flexible funding that is directed through, and assists in the development of UEM's management of decision making and implementation. We focus particularly on the three year period 1998-2000 on the assumption that a comprehensive three year co-operation agreement will be signed to begin in January 1998 (Annex A).

The evaluation covered: (i) Sida-SAREC research support; (ii) Sida core funding to contribute to university transformation; and (iii) the bilateral co-operation to strengthen agronomy teaching and research. There is also a fourth type of support, from Sida-INEC towards extension activities in one university centre (the Centre for Industrial Engineering Safety and Environment).

The support from Sida has grown steadily over the years and totals around 25 million SEK at present. Two forms of support, the Sida-SAREC research support and core support, have had a considerable impact in UEM, both in terms of their specific results, and in terms of their impact on institutional development processes. Two further and more recent forms of support, for departmental strengthening in agronomy and for industrial extension, have had less impact.

UEM has grown relatively strongly since 1990, student numbers almost doubling to 5,500. Administration has been streamlined, student facilities improved, and progress has been made in academic staff development. Present plans are to expand to 10,000 students.

Research capacity building

Our overall evaluation of Sida-SAREC research capacity building support is positive. Sida is the most important supporter of research capacity by far, both quantitatively and qualitatively. The development of research capacity at UEM has been significant, albeit from an extremely weak base. It has, through a mixture of project, programme and sandwich training support, its support for team-building initiatives and interdisciplinary research, its mix of support to beginner projects masters and doctoral research training programmes, and qualified (post-doctoral) research, and support for information, databases and equipment research infrastructure, had a major impact on UEM research capacity. The fact that the management of Sida-SAREC funds has been in UEM, and that projects and programmes need to be presented within faculty and university perspectives, has also led to research being quite well integrated into the institutional development of UEM. The support is seen within the university as having provided a model for research development and management.

The university is keen to continue research training systems with an institutional development component, and in following-up the partnership links built-up over the years with Swedish and other universities. The key issue is how to build on progress made. We considered the situation in most faculties and other units, including the overall management of research, and

believe there are real opportunities to further institutionalise research capacity building, rather in the ways formulated by Thulstrup and summarised in Annex D.

The sandwich model, which has been developed as a key form of Sida-SAREC support over the last decade or so, is a powerful means of building local research capacity at the same time as training Mozambicans in research using a variety of mechanisms, partnership types, multinational supervisory systems, and so on. It is relatively flexible regarding the sources of expertise of collaboration, the numbers of Mozambicans linked to each project, linkages with other local institutions, and regional links. It is well liked within the university. SAREC support has been dominant, and 13 Mozambicans have been trained to masters level, seven to PhD level since 1992. Another six PhDs are expected from this support within the next year.

Research output is slowly growing, as is its acknowledgement internationally. Of 45 citations since 1987, 31 have occurred since 1992. There is a growing ability to publish and growing quantity of publishable research. But most local reports and papers do not get into formal publications and efforts are needed to encourage staff to publish.

The next two to three years is likely to bring the beginnings of localisation of masters and postgraduate diploma programmes, and rather more local participation in doctoral project supervision. Such a development gives a major role to staff returning with PhDs. Their retention within the university and as researchers is obviously an essential condition for growth of research capacity. Conversely, if the university is unable to secure the full-time involvement of these staff in higher level academic activity, its strategic planning will not deliver the expected results.

UEM is considering requesting the government for a separate budget for research. At the moment there are no pigeon-holed funds for research within the government grant. The university is also considering establishing its own Open Fund for research, with associated decision-making and academic monitoring procedures.

There has been some education and training of technical and administrative staff that will assist research capacity building. Examples are technician training, librarian training, and postgraduate training in educational management. However, this has not received the same attention as academic staff training. The university has emphasised the need to prioritise improvement of administration and management in its new strategic plan. Some draft documents are already being produced, including one on how to better integrate financial management systems between the central finance directorate and the faculties.

Faculty-level capacity to manage research is still very weak in most cases. There is a need to develop procurement capabilities, budgetary and financial control systems, as well as laboratory systems. The faculties need to set up the means to pay for smaller items, keep accounts that can be properly checked and audited at the centre and by independent auditors, and to control procurement systems. Financial management needs to be made more sensitive to research needs.

At the moment, there is no science and technology policy body in Mozambique and no government ministry has clear responsibility for science and technology. There are signs that a national science and technology R&D co-ordination body is emerging. A positive aspect is that it is an elected representative body with an executive from the national research institutes, including the university.

Core Support

Sida core funding has made a key contribution to the implementation of the university strategy outlined in the document *Present and Perspectives*. In practical terms, core support usefulness is accentuated by its disbursement just once a year, and consequent continuous availability. Its use has been balanced between support for student scholarship and nutritional support, faculty consumables and undergraduate library book needs, internet and staff

training. Core funds are distributed at central and faculty levels; research funds at faculty, department and project levels and decision-making systems have been developed for such distribution.

So far, the initiative has not been supported by other donors although the university continues to request such support. One more donor is considering such a request at present. It is also true that the overall financial situation at the university, one of the reasons for the university development of its strategy, has deteriorated significantly in recent years as the effects of economic reforms impact on education. The salaries of Mozambican academics are now reduced to the level of 1990, and of other staff are even worse. A salary rise of almost 3 times would only put staff back to the situation after the rises in 1991. Staff retention problems are increasing, especially of qualified and skilled staff.

If anything, the university is even more dependent on pigeon-holed funding for ring-fenced programmes now. This presents the tremendous danger of differential conditions for staff and gradual breakdown of trust. If increased government support and local revenues cannot allow for the required salary rises, it is difficult to see how the institution can operate in a unified way.

UEM has made proposals to government for a new salary structure which would bring material incentives to academics who are committed to teaching, research and work at the university. It would increase the financial autonomy of the university, allowing increased material incentives for administrative staff. Other proposals and ideas include calls for government to support research, and for increases in interface extension activities that assist government and private sector activities in Mozambique and increase income for the university. The government has, thus far, not accepted the proposals but appears generally supportive. Government seems to want clear plans from the university about how it will increase its sustainability. Such plans may well involve joint UEM-government-donor action.

The Sida core funding support fulfils a vital need but can only fill a small part of UEM's basic needs if the institution is to become sustainable. UEM seems satisfied with the model of core funding and the associated university decision-making structures and would like to extend it to other donors. It sees this type of support as a model for future co-operation.

Teaching and research strengthening in Agronomy

Sida supports two departmental strengthening programmes, in Agricultural Economics and Agricultural Engineering. Although they were established before the integration of SAREC and Sida, these projects, to support teaching, staff development, research and extension, are rather new and therefore difficult to evaluate. They have had an unhappy period for various reasons, some unconnected to the UEM or the Swedish partner. It is important that the programme fills the needs of the university, given the importance of agronomy within national priorities. In spite of the problems, the Agricultural Engineering component has achieved some advances, notably in staff training of one MSc and in support to faculty training

Extension activities

The development of interface and extension activities are likely to become a key part of the new university strategic plan. The university is thinking about how its extension activities can develop in the public interest, and how they can assist in building collectively-run services that counter the present trend to fragmented individual consultancy.

Government seems also to be aware that the university might deliver more useful services than it does at present. The major task of the university is obviously to deliver trained high level men and women. However, the university gives more services than this. One example is the national internet service, but there are many more. The university wants to organise better its services and consultancy system, both to increase income, and to avoid further

fragmentation of the institution through individualisation of consultancy. At the moment it appears that those units that do operate effectively within the university do not have a clear mandate as to how to expand their operations, divide the income, and so on.

Other conclusions

UEM has implemented a number of policies over the years which act to improve the situation of women. These include scholarships and a new Hall of Residence for women and a series of actions that keeps the proportion of women at or near the 25% level of women in the school leaver population and at all levels to Assistant Professor. The university statistics are gender-visible. These policies appear to have been instituted by a gender-conscious management and by national policies, rather from any clearly articulated gender policy agenda.

The Historical Archives has become a major national resource with unique holdings, written, photographic and video archives. Its training programmes have produced most of the country's information workers. But the Archive's physical facilities are a major problem. The main building is leaking. Plans have been produced for European Union support but no clear response has been received. The large support over the years, including from Sida, is at risk from the lack of decision about the future building of the Archive.

The library services suffer from a lack of trained staff. Although 17 are now abroad training none will be back in the next year or so. Although the 17 library premises remain open, most do not have enough space for students. Only one library has working CD-Rom facilities. Book and journal acquisition continues to be well organised. There is a clear need for computerisation of the library systems and for more space.

10.2 Recommendations

- 1 The evaluation team assumes and supports that there will be a single co-ordinated agreement between Sida and UEM for three years starting 1st January 1998. This will give the opportunity for slightly longer time frames for research support, and could, if fund releases are synchronised, allow for a smaller number of releases each year, even one per year. Such a co-ordinated agreement would have specific components, such as research capacity building, core support, and perhaps departmental/faculty strengthening and extension support. Such an agreement would give significantly improved flexibility to UEM, but would require a clear reporting system and clear target dates for completion of activities.
- 2 There is a strong case for continued support, to continue the development of research capabilities and institutional development at UEM and significant scope for gradually increasing support in an evolutionary way as UEM implements its mid-term and longer-term strategic plans from 1998. We recommend continued and incrementally increasing support, based on UEM's own plans, any increases being triggered by the university's detailed plans. We do not recommend radical changes to Swedish support over the next three years unless the UEM new strategic makes major changes to university strategy.

Research Capacity Building

- 3 We have the following suggestions for improving research capacity and its integration into the institutional development of UEM and national research capacity. We believe the sandwich model can be further strengthened over the next period. In particular, we think that, as Mozambicans return with doctorates and wish to begin post-doctoral research, they can act as leaders of clusters of related researchers, undertaking PhDs, Masters and Licenciatura projects. For example, the Science Faculty is one unit, but not the only one, where such an approach is possible, since there are already small clusters of researchers in Biology, Physics, Chemistry and Geology. Strengthening could include both project and programme funding

and small Faculty and University Open Funds linked to research cluster building around post-doctoral researchers.

- 4 We believe the development of small clusters of researchers is one pre-requisite for postgraduate training to begin. The research clusters could be given research support as they join with the development of postgraduate programmes and doctoral supervision. In this regard, the experience of Sida support for Masters development, as in Ethiopia, might be helpful. The development of Masters programmes, using research clusters, could begin flexibly with joint accreditation systems, joint supervisory systems, assistance with academic monitoring, and so forth. Modular, credit-based systems may be appropriate in some circumstances.
- 5 Special research support might be needed to encourage returning staff to develop good quality research proposals that involve more junior staff members and build research clusters. Small Open Funds would be one way to encourage such an approach. But much more is needed, in terms of delivering the basic needs of staff and regulating their obligations following expensive training.
- 6 UEM has proposed new salary and incentive systems for staff which will encourage those who are involved in research and licenciatura diploma supervision. We urge that such an approach is extended to postgraduate teaching and supervision, joint supervision of Masters and Doctoral research projects, and research publication in international journals. There are various ways of implementing such incentives, including adding a component to student fees, adding a component to related research grants, and adding such an incentive to the new university proposals to government, assisting staff with translation of publications, and other incentives for publications.
- 7 At the moment, there are few senior Mozambican staff members (and rather few senior expatriate staff). UEM has clear regulations for academic career progression but some further support and encouragement for senior staff progression may be required. Support and encouragement usually includes guidelines on expectations in terms of publications, research and teaching initiatives, external recognition, and so on.
- 8 The decision of UEM to consider establishing an Open Research Fund is very positive, since it will mark an advance in the institutionalisation of research capacity in the university. Sida-SAREC has provided small Open Fund support in the past with rather positive results. We believe there is a case for small Open Funds to be provided, at faculty and university level. There is a case for Sida support at university level, and in those faculties with successful Sida supported research. Such Open Funds will require clear criteria, which might include support for beginning research, post-doctoral research teams, local postgraduate research initiatives, with appropriate academic monitoring systems so that their administration will build research management capacity
- 9 There is the possibility of an expanded role for Swedish partners. Most partners take a good interest in their Mozambican projects. They usually visit Mozambique, send equipment, and so on. They are good arguments for expanding the role of some partners. Although it should be clear that UEM makes the decisions regarding project execution and management, we believe that Swedish partners could play an important advisory role in academic monitoring. Senior Visiting Professors might assist in the review of programmes, contribute seminars, assist with short teaching spells as postgraduate programmes begin, and act as external examiners on post-graduate and doctoral programmes.
- 10 At university level, we believe there is a strong case for support of UEM's plans to prioritise administration and management, particularly as they affect:
 - (i) improvement of research management - including of Open Funds, evaluation and academic monitoring, and post-doctoral staff research involvement; and generally the

- improvement of decision-making processes and systems for flexible funding allocations and the accountability of sectors that obtain flexible funding;
 - (ii) strengthening of financial management in ways that allow flexibility to projects, departments and faculties in the ways that they implement their research projects whilst giving the central Financial Directorate control over audit and accountability, and over budgetary control.
- 11 The generic research labs established by the Science Faculty are a possible model for other faculties to follow. Such generic research labs could then be extended as postgraduate programmes are set up.
- 12 There is a strong case for a two-level approach to financial management of research, where the central units of the university take responsibility for overall financial accounts and for controlling the independent audit, whilst faculties take responsibility for the implementation and day-to-day control of research budgets. The activities of each would need to be defined in a detailed way, so that training can build up a relationship between them. This is the normal way by which financial management systems are made responsive to the needs of the researchers. There is a systematic need to train at faculty level. Support for research should build-in support for capacity building in this area.
- 13 The implementation of most of these recommendations would be helped by the establishment of a Research Committee to take overall responsibility for research. If the various research support funds are to be used to best advantage, whether from government or from the many donor agencies, there is a need for a clear system that facilitates rather than constrains research.
- 14 The national science and technology policy co-ordination body is emerging, being elected from the national research institutes. There may be a case for some limited support as this body emerges, perhaps focused on developing ground-up and practical research co-ordination and training.

Core Support

- 15 The core support from Sweden to the university has played a major role in giving flexibility to the institution as it implements the strategic plan. We recommend that the core funding is continued, and used according to criteria set by the university from its Strategic Plan. During the three year period 1998-2000, as the university begins implementing its new Strategic Plan, it is important that core funds are able to be used flexibly to accommodate any changes in university plans.
- 16 The *Present and Perspectives* strategic document has been in place since 1992. A thorough review of what it has achieved would be a major input to the discussions on the future Strategic Plan of the university.
- 17 The overall sustainability of UEM depends on increasing the proportion of core flexible funding within the institution. Thus far, UEM has tried hard, but has been unable to persuade other funders of this self-evident fact. There are some indications that a few funders may be changing their conditions a little. How can the university convince funders, including government, to change the support regime? Any objective onlooker would realise that the issue cannot be resolved just by the university - the funders also must re-assess why they are supporting the university. We would value the university's consideration of the following:
 - (i) whether there is a case for a university representative body to oversee decision-making on use of core funds, from whatever source. This would need to be a major committee, a Finance Committee, with top-level representation;
 - (ii) whether co-ordinators may be needed, say along the lines of the Scientific Director's role for Sida-SAREC research support, as a way of co-ordinating resources without creating new structures;

- (iii) whether the establishment of Open Funds for certain areas might lever more flexible funding in those areas. Examples might be Research Open Fund, an Open Fund for strengthening management and administration within UEM, and, an Open Fund for computerising the university, including library and information systems development.
- 18 Core support is needed for the university's priority to improve administration and management. This includes for training and appreciation of systems elsewhere. Sida might focus its support on research and financial management systems, including technician training and library information systems courses. Many of the latter can be established inside the Informatics Centre of UEM. The 'rethinking the university' process taking place towards the new Strategic Plan might itself require some small core support, as the university attempts to position itself as a public institution in the new political and economic situation in Mozambique.
- 19 The university is beginning a curriculum revision process in some faculties. Core support may be needed for this process, especially if external advice is required. In Recommendation 9 we suggested support for the academic monitoring process in research and post-graduate courses. This could be extended rather easily if the same external advisors were used.
- 20 The core funding provided by Sida, which at present stands at 8 million SEK, is not enough, by itself, to fund the next Strategic Plan's key programmes. One possibility would be to gradually increase core funding in function of one or two new activities that may be required after 1998. Obvious candidates might be postgraduate education, Open Funds, strengthening administration and management, and library information systems.

Teaching and research strengthening in Agronomy

- 21 The departmental strengthening programmes, we believe, can learn from the Sida-SAREC philosophy of support to UEM. This has been flexible and grows rather slowly based on the capacity of local researchers, sandwich training and so on. We think a more flexible approach is needed, based on university needs.
- 22 The programmes, in Agricultural Economics and Agricultural Engineering, represent an opportunity to establish a significant sandwich training programme in conjunction with partners. Each department might think in terms of the development of a cluster of Mozambican research-active staff. Thus Mozambican academic staff need to be contracted by the UEM over the next two to three years if training is to be successful. Similarly, if UEM can recruit senior expatriate staff from the region, that could also improve the ability of the programme to deliver its objectives.
- 23 Where possible, research facilities should be developed that can be used on a faculty-wide basis, and workshops for heavy research vehicles might be equipped with the whole university campus' needs in mind, to avoid duplication of expensive facilities.

Extension activities

- 24 It is important and urgent that there is a clear policy on consultancy and extension activities, which gives incentives to units to expand. Guidelines are needed on types of benefits for staff, percentages to be retained by units, and so on. There is also a need for a more aggressive policy to promote the UEM's capabilities, especially to government institutions. Sida-INEC has taken the initiative and begun support to extension within the university, by supporting one centre. We recommend that Sida study whether there is a case for more general support of university/industry activities.

Other recommendations

- 25 Because female intakes are as low as 25% at school as well as university level, action is required in other institutions as well as the university to increase the proportion of women finishing school and eligible to join the university. In order to address this issue, as well as the

issues of women staff and students, gender issues need to be addressed explicitly as a key, mainstream topic in the university's present strategic planning exercise.

- 26 A building is needed to house the Historical Archive collections before they deteriorate, and the approach to the European Union could be supported by a range of European partners of UEM so that it becomes a priority for funding. UEM is supported by most members of the EU, including the southern EU countries. The issue of archivists is also rather special, though not unique. Trained archivists regularly leave the university after training to take up more lucrative posts elsewhere. Like other specialist positions, generic civil service salary scales cannot do justice to the specialist skills. The proposal from UEM to government on technical and administrative staffs might take account of the specialist skills of archivists.
- 27 We recommend that Sida consider supporting the computerisation of the library system. These facilities are very weak at the moment whilst the university's Informatics services are well developed. The university appears to be planning systems that can be gradually upgraded as resources allow. Given the 'revolution' in database access that is taking place, there is an urgent need for support to begin improvement of UEM's systems.
- 28 The university wishes to prioritise the development of distance education, as a means of extending higher education to the north and centre of the country. As new higher educational institutions proliferate there is a big danger that the quality of educational provision will be compromised. The university recognises the need to develop academic monitoring and evaluation systems, and these will be essential if distance education is to be effective. If UEM wishes to remain the National University within Mozambique, distance education presents an opportunity, and a challenge, to extend its effectiveness nationally, and to develop the national higher education system. Support may be required to develop quality and academic monitoring systems for distance education that are also essential for UEM's headquarters' education.
- 29 Sida support has grown gradually over the years, providing a stable and reliable system of co-operation. It has supported a range of activities, with significant foci, particularly research support and core funding support. The form of support has allowed and assisted the development of university decision-making processes. Our recommendations to UEM focus around improvement of decision-making and management processes as it moves to convince government and society that it can increasingly deliver the services demanded of it in the public interest, and do so with moves towards sustainability. Our recommendations to Sida focus on the possibilities within the next three years for evolutionary, quite flexible, and perhaps some increases in support that will put the university in position to increase its activities and the quality of its staff, teaching and research, all within the management control of UEM itself.

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Annex A: Terms of reference for an external evaluation of Swedish support to UEM

1 Background

SAREC's collaboration with Mozambique began in 1978 three years after the country's independence and has developed into a broad university support over the years. In the context of national reconstruction, where research activities and research structures were almost nonexistent the early Swedish support was mainly directed at meeting immediate needs, such as the restoration of the Mozambican Historical Archives, the analysis of archaeological material and the launching of developmental studies at the newly created Centre for African studies. Creation and preservation of databases were the major concern, which implied an emphasis on the acquisition, running and maintenance of research equipment.

Once faculties and research centres were gradually consolidated, more coherent, comprehensive research programmes started to emerge and by the late 80's it was clear that UEM-SAREC collaboration should be regarded not merely as problem solving oriented but rather as a mutual commitment to support the development of indigenous research capacity, as well as for the development of research structures and research management at the UEM. Thus, the support has been geared more towards research training.

SAREC has developed a policy for support to universities in the least developed countries in collaboration with Sida (Ownership and Cultivation of Knowledge, 1992). Key areas for institutional support will be university management and the development of research capacity at selected faculties. Such broad support has been given to University Eduardo Mondlane, UEM in Mozambique.

The scope of the Swedish support to UEM became enlarged in the early 90's, when the Swedish government responded positively to the UEM call for support to its strategic plan for stabilisation and development, termed 'Presente e Perspectivas'. That plan, launched at consultative meeting held in May 1991 involving national representatives and the international community states as its overall objectives the following:

- to retain and stabilise the academic, technical and administrative staff of UEM;
- to improve UEM outputs, namely in terms of quality of its graduates, relevance and quality of its research and consulting services;
- to establish a scholarship/grants policy that could ensure the national character of the university by allowing access to enrolment of students from all regions of the country, irrespective of their gender, class and ethnic background;
- to improve living and learning conditions of students;
- to increase the quality of teaching, research and support services;
- to increase the internal efficiency of the university management;
- to promote and accelerate the development of faculties and centres whose programmes are crucial for the social and economic development;
- to create conditions conducive to subsequent sustainable and balanced development of the institution.

In response to such a programme the Swedish government through former SIDA made its commitment to contribute to an improved functioning of the university as a whole and to ensure that resources are available to carry out vital activities for the future of the University. Thus ever since, former SIDA has annually from 1992 made available to UEM funds (8 milj SEK/year), in addition

to Swedish support through former SAREC (total of 112.3 milj SEK during 1978-1996) , for support to the following specific programmes:

- student grants;
- scholarships for academic, administrative and technical staff training
- construction and rehabilitation of student hostels;
- purchase of equipment

Within the Swedish bilateral agreement with the Ministry of Agriculture Fisheries through SIDA, a component of support has been included since 1993 for an institutional collaboration between the Faculty of Agronomy at UEM and the University of Agricultural Science in Uppsala (a total of 8,8 milj SEK). The focus has been to strengthen teaching and research in two fields, agricultural engineering and economics. So far the main part of the support has been utilised for contracting Swedish teachers for work at the faculty in order to improve the weak output of students and strengthen faculty development and prepare for research activities in the faculty.

The merger between former SIDA and SAREC has created a need for a basis to coordinate the different types of Swedish support into one comprehensive support and the coming agreement will have to include all former components of support. In the current agreement with Sida it was stated that UEM should evaluate the core support before a new agreement will be prepared. Former SAREC Board had given the same instructions for the support to research activities. The new agreement will start to function from January 1998. We therefore feel that at this time it was useful to combine the earlier intended separate evaluations into one and also include the support to the faculty of agronomy in the evaluation. This evaluation will possibly give a valuable input for the discussions between Sida and UEM in preparing the new agreement.

2 Scope and Focus for the Study

The consultants should in the light of preconditions and orientation of the current cooperation between UEM with SIDA and SAREC, since July 1995 Sida, specifically during the period 1992-1996, discuss the effects and results of the total Swedish support. Focus should be given to what extent it has been instrumental to bring about change. There is a need for recommendations for future directions for the cooperation which should focus on a broader development of the University. Suggestions how both partners could organise their activities for a more efficient collaboration regarding support for research, research training and institutional development of UEM will be welcomed.

The report should also discuss how a continued more comprehensive Swedish support in the new Sida can contribute to the development of a policy and future strategy for University/Faculty development, and suitable options for external support for this process. Suggestions for improved management and administration, internal auditing and reporting systems both at central level and at faculty/institutional level should be reflected upon with specific emphasis on research activities and research training. The consultants shall describe various aspects as indicated below, to identify obstacles for the development and comment on the relevance of research efforts in this context. In each of the aspects mentioned, weight should be given to the situation for women at the university and how their position at the university can be enhanced.

2.1 Brief description of the current situation of UEM

What is the current situation at the UEM concerning governance, staffing, finances and administration? Give a brief resume for the overall capacity, gender specified information on number of student, examination rates, degrees given?

2.1.2 Analyse the current research situation and the impact of the Swedish support

The consultants should give a brief description of the present research situation and give an overview of available resources and general scientific achievements at the various faculties. They should also more specifically focus on the following areas:

Human resources and capacity building

Is there a long-term staff development plan which includes equal possibilities for women? What opportunities for research training are available, in-house, sandwich-based, external scholarships? Is there a policy for recruitment of students and what are the rules and regulations for enrolment in research training including? To what extent has the Swedish support been utilised to develop this area? To what extent has the Swedish support been promoting UEM policies in the area?

Analyse the cost effectiveness of research training and supervision according to the 'sandwich model' mainly used within the former Sida/ SAREC collaboration in relation to other training models within and outside the Swedish support with most of the training abroad. Discuss length of stay in Sweden or elsewhere, frequencies and administration of travel by students and supervisors, planning and scheduling of the research training both at UEM and at the cooperating institution.

Are the research environments presently supported by Sida/SAREC viable in a long-term perspective? What kind of support will be necessary to create sustainable research environments after the period of research training? What competence is available or will be needed in the future for postgraduate education as well as examination at UEM (MSc or PhD level)? To what extent has the Swedish support served to improve quality of teaching at the faculties involved?

Physical resources

To what extent have the support contributed to: the build up of physical resources for research, localities, equipment of laboratories, computers, transport etc. Compare the situation at different faculties. To what extent have faculties/departments been able to utilise and benefit from the support? To what extent have the different faculties/departments been able to benefit from the different modalities of Sida-support (core-funding, UEM-SLU cooperation and SAREC-mediated support)? What is the current capacity to operate and maintain scientific equipment? Discuss more efficient alternatives for the future support.

Administrative capacity

To what extent are the administrative routines and systems conducive for procurement of goods, supervision and monitoring of available research funds? Where are the bottle-necks? Has the Swedish support made an impact to improve the conditions? Discuss possibilities for a more efficient utilisation of the Swedish support.

Library facilities

To what extent are library facilities available, including scientific journals, textbooks, E-mail for communication with outside libraries conducive for the research work? To what extent are communication facilities adequate for contact with outside researchers, telefax, E-mail? To what extent has competence of technical staff, laboratory assistants, maintenance, librarians been influenced by the support to support research work? Discuss possibilities for continued Swedish support in this area.

Financial resources for research

What resources are currently available for research at UEM or the various faculties? Are there national, university or open research funds at the faculty level that may be sought by departments/researchers? How are these allocated and administrated? What other external funds specifically for research? To what extent have the Swedish support influenced on government allocations for research? Discuss possibilities for a more efficient support in the future.

Capacity for administration of research and research training

What impact has the Swedish support had to create structures to plan for and administrate research training? What has been achieved and what is planned for at central and faculty levels for the future? Which is the current organisational structure and what changes are envisaged? Has the capacity to coordinate and negotiate for external support and specifically research support from various donors resulted in a changed situation over the period and has the Swedish support been conducive to a change? What are the obstacles for change within UEM and within the donor community? To what extent has the availability of basic flexible funds influenced on government funding? What should be done in the future?

Ongoing research activities

What is the output of scientific activities, academic examinations, publications, seminars etc.? Are any records/statistics available? What are the conditions for collaboration with other institutions/services in the country, region, in the North or with international research programmes? What is needed for future development?

2.1.3 Institutional plans and future directions for research

What type of institutional plans or development strategies are available? Are there any overall plans for the university, regarding administrative, academic and research development? How are the faculties involved in such a planning process? Describe (or indicate if a process has been initiated to develop) policies and plans for research development at the university/faculty/department level? What are the plans to improve institutional and administrative support for research and research training? Are there any plans for a decentralised administration of research funds? To what extent can external support strengthen this area?

Is there a mandated role of the university in relation to research? Has any policy for research been formulated, at the national level for the university, or at the university/faculty/department level? Who sets the agenda for research and/or determines research priorities? Who negotiates external support for research? To what extent has UEM activities been able to influence/direct national policies? Can a continued support be utilised to strengthen these areas?

2.1.4 Wider institutional support to UEM through Sida core support

The consultants should assess to what extent the support has been utilised and contributed to a development of the general objectives stated in "Presente e Perspectivas" and in the mutual agreement between UEM and former SIDA.

The magnitude, outputs and impact of each of the various Sida sub-programmes shall be assessed as to determine the extent of their contribution to institution building. The consultants should look into the various components of the core support, their utilisation and the impact.

The consultants should assess different donor requirements for support to UEM. What are the conditions, design, mode of disbursement, reporting requirements? Has the aim from the consultative meeting 1991 been fulfilled where donors were encouraged to support UEM's programs? To what extent has the model of Swedish core support been followed by other donors and what are the existing conditions for a policy shift from other donors?

To what extent has Sida support influenced the capacity of UEM to define and enforce its requirements for external support and cooperation. Based on the aims formulated by UEM the consultants should assess to what extent the core support has contributed to the institutional development of UEM regarding organisation, distribution of responsibility, financial administration and management.

The consultants should assess the format and content of Annual and Financial reports and to what extent they meet the requirements of the various donors for information in order to avoid too many

separate reports. Is there a need for an adjustment? What are the routines for external auditing and to what extent do they fulfil donors' requirements for control.

2.1.5. Sida support to the Faculty of Agronomy

The study should assess the format and size of the institutional support to the faculty of agronomy in relation to the overall Swedish support. The support should also be evaluated in relation to the national context where agriculture is a prioritised area.

The consultants should assess to what extent the support has been utilised and what is the contribution to a development of the two departments involved (engineering and economy) at the Faculty of Agronomy. The magnitude, outputs and impact of the support to the two departments shall be assessed as to determine the extent of their contribution to institution building.

To what extent has the Sida support made an impact to basic education, student output and quality of teaching, change of curricula and preparation for research in the? What is the impact of the support in a long term perspective? How cost-effective will utilisation of long-term recruited expatriate teachers be?

How will continued support to the faculty best be utilised? Are there options for a different utilisation of the funds?

2.1.6. Identification of constraints and recommendations for Institutional/Faculty development

The consultants should indicate major bottle necks and constraints for university/faculty development at large and in particular for the development of relevant research. To what extent can possibilities for a better coordination of the total Swedish support in the new Sida act to promote the development of UEM. Wherever suitable the consultants may suggest how faculties best can utilise existing resources and how they best can utilise external support.

The consultants shall give their recommendations to Sida/ SAREC on how to provide suitable support for institutional as well as faculty development. The consultants shall also indicate key issues aiming to identify suitable external support for this development.

3 Methodology and Schedule

The evaluation team will consist of four team members. One will be assigned as team leader with a special task to finalise the draft report written by the team and one will be selected locally in Mozambique. There is a need for understanding of Swedish and Portuguese by some of the team members in order to read background documents. For the evaluation the consultants shall:

- 3.1 Review documents, publications and reports presented by UEM and Sida. This will be presented to the team at a 2 day previsit at Sida and at arrival in Mozambique.
- 3.2 Visit relevant representatives from departments at Sida (SAREC, DESO/UND and NATUR) for 2 days in Stockholm. One of the team members (Swedish speaking) will contact selected Swedish collaborating Institutions by phone and possibly for a few visits before the visit to Mozambique.
- 3.3 Visit Mozambique during 2 weeks to collect necessary information and meet with Faculty representatives and staff, relevant Sida staff at the Swedish Embassy and if time allows relevant representatives of the donor community.
- 3.4 The consultants shall present and discuss findings and tentative conclusions with relevant representatives from UEM and Sida staff representatives from the Embassy and Sida/SAREC staff visiting Mozambique before leaving Mozambique.

- 3.5 It is expected that a total of 4 weeks each shall be used for the team members for evaluation with approximately two weeks in the Mozambique, two days in Sweden and writing the draft report. The Mozambican team member will not be included in the visit to Sweden. The team leader will receive two extra weeks for finalising the report.
- 3.6 The Consultants will make their own travel arrangements. The visits will be facilitated through contacts from Sida/SAREC, Swedish Embassy and UEM.

4 Reporting

A draft report in English shall be presented to Sida not later than June 15. It should begin with an executive summary and close with a section on conclusions, recommendations and proposed key issues for discussion. A final report shall be delivered on paper as well as on diskette (Word 6.0 or compatible format) not later than 4 weeks after comments have been received from UEM and from Sida/SAREC. The report should be presented in a way that enables publication without editing and shall not exceed 60 double spaced typed pages excluding annexes. The outline of the report should follow Sida Evaluation Report - a Standardised format (see Annex 3, p 71 of Evaluation Manual for Sida). The evaluation assignment includes production of a summary according to the guidelines for Sida Evaluation Newsletter (Annex 1) and the completion of Sida Evaluations Data Work Sheet (Annex 2). The separate summary and a completed Data Work Sheet shall be submitted to Sida along with the final report.

5 Utilisation of Report

The report may be used and distributed by Sida, in its entirety or in parts.

ANNEX B Contacts of the Evaluation

In Sweden

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Anders Granlund, Research Co-operation Department
Ingmar Gustavson, Education Division
Maija Lindroos, Research Co-operation Department
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Prof. Nils Möller, Engineering
Prof. Frank Petrini, Economics
Johan Toborn, International Rural Development Centre

Swedish Project Leaders:

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In Mozambique

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Monique Korzelius

National Directorate of the Budget:

Yolanda Fortes, National Director

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Orlando Antonio Quilambo, UEM

Gabriella Rebello da Silva, National Institute of Standardisation and Quality

Sida

Claes Kjellström, NATUR

Anne Pedersen, Gender Officer

Ann Stödberg, Counsellor for Development Co-operation

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ANNEX D: Higher Education and Research Capacity Building through North-South Co-operation

Key Components. In spite of differences in national needs it is possible to identify some main components of good higher education and research capacity building project.

1. Training, especially of university staff, including researchers, teachers, technicians, librarians, and managers in **all relevant aspects** of university education and research;
2. provision of buildings for teaching activities, research, libraries, administration, and possibly for housing of staff and students;
3. provision of teaching facilities, including class-rooms, teaching equipment, teaching laboratories, etc.;
4. provision of research equipment, computers and service facilities for research and teaching equipment;
5. funds for operation and maintenance - it is generally considered important that these are provided by local sources;
6. provision of textbooks, research journals, access to data bases and other communication channels - in recent years electronic communication (facsimile, electronic mail) has become and extremely valuable tool for international communication among researchers;
7. on a national level, support for development of professional societies, subject specific research journals, and communication channels between universities and users of knowledge (i.e. industry, extension services, health workers, schools, etc.);
8. access for university researchers and educators to international communities in the relevant fields;
9. incentive systems at all levels (at universities, faculties, departments, and for individual administrative staff, teachers, researchers, and students) which ensure that facilities and working time are used in the most productive fashion - an important part of such incentive systems are well designed and fair promotion rules and salaries, which make full time work efforts possible, and
10. monitoring and evaluation systems, not only for the build-up phase, but more importantly for the productive situation that is supposed to follow after the initial investments.

(Taken from Thulstrup, 1995).

Guidelines for North-South Capacity Building Projects. Based on the experience gained through the many years of SAREC support of higher education, research and research training in the Third World, Bhagavan (1992) lists a number of key recommendations for projects based on cooperation between institutions in developing and industrialised countries:

1. Each cooperating group should include a substantial number of researchers (the cooperation should be "institutionalised"),
2. the partners should meet regularly to review ongoing work and plan future activities.
3. transparency in all budget matters should be ensured,
4. research papers should be written jointly - e.g. names from both cooperating research groups should appear on the research publications, and
5. project managers on both sides should be senior scientists in central positions in their respective institutions.

Identical criteria for fruitful cooperation appear to be valid in other programs (Gaillard and Thulstrup, 1994). They are, for example, also listed in the evaluation report for the Danish ENRECA program (Danida, 1992), where some further recommendations are added:

6. Capacity building must include all aspects of the work to be done (not only the research itself, but also how to invest in and manage research facilities, and disseminate research),
7. no single capacity building project is able to secure development on its own, but must be designed in coordination with related activities in the country,
8. research training is an important part of capacity building towards sustainability. In order to increase the commitment, it should, whenever possible, be part of formal degree programs,
9. the remuneration of local staff involved must be sufficient to ensure a full time commitment,
10. efficient and fast communication channels, such as facsimile and electronic mail, must be available to secure efficient interaction between partners, and
11. project monitoring and evaluation are important, both as learning processes and as a way of providing guidance and incentives to project participants. Monitoring should emphasize project outputs rather than inputs.

(Excerpts from Thulstrup, Fekadu and Negewo)

Recent Sida Evaluations

- 98/25 Sustainable Dry Forest Management. Sida-supported collaborative research project between Burkina Faso and Sweden. Karin Gerhardt, Kerstin Jonsson, Eva Evers Rosander
Department for Natural Resources and the Environment
- 98/26 International Centre for Research in Agroforestry, ICRAF 1990-1997. Bo Tengnäs, Arne Eriksson, Terry Kantai, Alice Kaudia, Jeff Odera
Department for Natural Resources and the Environment
- 98/27 Cooperative Reform and Development Programme, CRDP in Uganda. Mick Moore, Lindah Mangali, Z Ojoo
Department for Natural Resources and the Environment
- 98/28 Water and Environmental Sanitation Programme, WES in Uganda. Clifford Wang, Eva Poluha, Jerker Thorvaldsson, Sam Mutono
Department for Natural Resources and the Environment
- 98/29 The Nordic Funded Rural Employment Sector Programme in Bangladesh. Claes Lindahl, Julie Catterson, Robert Andersen, Inge-Merete Hirshholmen, Shamima Nasrin, Petra Stark
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