Evaluation report on the inter-university cooperation between the University of Dar es Salaam, Catholic University of Nijmegen, Technical University of Eindhoven, Graphic Media Development Centre, The Hague

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M. van der Linde

November 1988
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1. INTRODUCTION

In September 1983, the report on the External Evaluation of the inter-university cooperation between the University of Dar es Salaam (UDSM, Tanzania), the Catholic University of Nijmegen (CUN) and the Eindhoven University of Technology (TUE) was published.

The main conclusions and recommendations of this report were that, although there were a number of points in the cooperation that deserved a serious reconsideration and adjustment, the cooperative link as such should continue. However, it should be given another form and a better management.

The main lines of these conclusions and recommendations were accepted by the UDSM. However, the CUN and the TUE formulated some reservations in relation to the main conclusions and recommendations.

The NUFFIC/PUO Committee agreed in principle with the evaluation report (comment of the NUFFIC/PUO Committee of early 1984) and took it as a starting point for the negotiations of third phase of the cooperative link between the UDSM and its Dutch partners.

The preparations for the planning of this third phase started in 1984 and on 13 December 1985 the NUFFIC/PUO Committee decided to bring out a positive advice to the Minister of Development Cooperation for the financing of the third phase.

Five years after the first external evaluation, it was decided to carry out a second external evaluation to cover the period 1983-1988.

The report of this external evaluation is composed according to the main lines of the terms of reference (ToR) formulated by NUFFIC on 12 July 1988. It is based on the documentation (the project documents and reports, minutes of meetings, evaluation reports and correspondence, and a field visit during October/November 1988.

The main objectives, as stated in the ToR, were to analyse and assess:
1. the way in which the cooperative link is implemented in comparison to the original planning;
2. the effectiveness of the cooperation with respect to
   a. institutional strengthening of the different sub-projects;
   b. the relationship of these sub-projects to Tanzanian development problems;
3. the possibilities for continuing all or some of the projects in a subsequent phase.

It was stated:
"Emphasis in the evaluation should lie mainly on the level of the cooperative link as a whole. Although the various projects that make up the cooperative link should be mentioned in the global assessment, it is not the intention that there be a detailed analysis of each separate one."
Before the field visit took place a Briefing Document was formulated. This document was distributed to all parties and individuals involved, and comments were received. During the field visit this document became an important lead during the discussions.

At the end of the field visit the evaluation team produced the Debriefing Notes, which were discussed in detail during the meeting of the Central Steering Committee at UDSM on 02-11-1988 (N.B. This meeting was attended by Mrs. H. Zaal of the Netherlands Embassy.) These Debriefing were also forwarded to NUFFIC and the project steering group in Nijmegen, Eindhoven and at GMDC.

They all made their comments and these were discussed during a Centrale Begeleidings Commissie vergadering on Friday 18 November 1988.

In writing the Final Report the evaluation mission has tried to blend the Briefing Document, the Debriefing Notes and all the comments forwarded.

The evaluation team would like to express its appreciation for the full participation of all those who are involved with this Inter-University Link.

Due to the "participatory" approach followed by the evaluation mission, the chance that the discussion on the relevant issues and new ideas will improve and strengthen the Inter-University Link, hopefully has been increased.
2. THE COOPERATIVE LINK

2.1. History of the Cooperative Link

In 1979, Dfl. 3 Million were reserved for the first phase of the cooperative link between UDSM, the CUN and the TUE. The fields of attention during this first phase were dentistry, science and electrical engineering. Projects in these fields started in 1979 and 1980.

The second phase of the cooperative link started in 1982. For the period 1982-1985 an amount of Dfl. 6.2 Million was reserved. This period can be characterised by the diversification of the various projects.

During the second phase, an external evaluation of the cooperative link took place. This evaluation formed the basis for the negotiations for the third phase.

This third phase - subject of the present evaluation - covering the period 1986-1989, implies a requested budget of Dfl. 5.9 million plus 20 cooperants through the DGIS/supplementation programme (operational experts).

Table 1. Overview of the requests for the third phase

<table>
<thead>
<tr>
<th>subject</th>
<th>implementing organisation</th>
<th>PUO-funds requested</th>
<th>operational experts</th>
</tr>
</thead>
<tbody>
<tr>
<td>medicine</td>
<td>CUN</td>
<td>Dfl. 980.000</td>
<td>7</td>
</tr>
<tr>
<td>dentistry</td>
<td>CUN</td>
<td>Dfl. 1.000.000</td>
<td>3</td>
</tr>
<tr>
<td>science</td>
<td>CUN</td>
<td>Dfl. 1.640.000</td>
<td>4</td>
</tr>
<tr>
<td>central science workshop</td>
<td>CUN</td>
<td>Dfl. 800.000</td>
<td>2</td>
</tr>
<tr>
<td>electrical engineering</td>
<td>TUE</td>
<td>Dfl. 980.000</td>
<td>3</td>
</tr>
<tr>
<td>university press</td>
<td>GMDC</td>
<td>Dfl. 400.000</td>
<td>1</td>
</tr>
<tr>
<td>general/coordination</td>
<td></td>
<td>Dfl. 120.000</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>Dfl. 5.920.000</td>
<td>20</td>
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</table>

[The amounts mentioned here are derived from the NUFFIC advice to DGIS on the third phase. In the next chapter, amounts that are derived from the descriptive notes and papers of the various projects and sub-projects are used, that may slightly differ.]

The amounts allocated by PUO differ for some subjects from the amounts requested, as indicated in table 2:
Table 2. Amounts and personnel allocated (third phase)

<table>
<thead>
<tr>
<th>subject</th>
<th>Amount allocated</th>
<th>operational experts</th>
</tr>
</thead>
<tbody>
<tr>
<td>medicine</td>
<td>Dfl. 200,000</td>
<td>3</td>
</tr>
<tr>
<td>(1986)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dentistry</td>
<td>Dfl. 1,000,000</td>
<td>3</td>
</tr>
<tr>
<td>science</td>
<td>Dfl. 2,000,000</td>
<td>3</td>
</tr>
<tr>
<td>central workshop</td>
<td>Dfl. 750,000</td>
<td>2</td>
</tr>
<tr>
<td>electrical engineering</td>
<td>Dfl. 1,000,000</td>
<td>1-2</td>
</tr>
<tr>
<td>university press</td>
<td>Dfl. 400,000</td>
<td>1</td>
</tr>
<tr>
<td>general/coordination</td>
<td>Dfl. 120,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dfl. 4,670,000</td>
<td>13-14</td>
</tr>
</tbody>
</table>

[It is important to note that the amounts mentioned here do not always correspond to the amounts in the next chapter, where the individual projects and sub-projects are discussed.]

The only new project that started during the third phase is the University Press. This project has been added on the explicit request of the vice chancellor of UDSM.

The programme as it has been presented here was agreed during a joint meeting of both the Tanzanian and the Dutch steering committees in January 1985.

During the joint meeting, the management structure of the cooperative link was, next to the separate projects, one of the most important issues. The decision was taken that at the Dar es Salaam side the Director of Postgraduate Studies would act as the general coordinator of the cooperative link. The day to day coordination work would be carried out by a full time Head of the Section called Cooperations, Links and Projects.

No decisions, however, were taken during the joint meeting of the steering committees of January 1985 to improve the management structure of the cooperation at the Dutch side.

2.2 Management Structure of the Link

2.2.1 General

The External Evaluation report of September 1983 concluded that 'the management of the cooperative link, which has grown into a comprehensive and complex organisation involving many institutions, lacks a professional standard' (External Evaluation report, page ix).

This conclusion has received at that time a lot of comments from the various partners and has remained on the agenda ever since.

However, these comments are quite diverse, which might indicate that each partner in the link uses his or her own frame of reference.
Coordination and strengthening of the management structure can be considered at various levels:
- individual projects;
- joint coordination at the level of the various Dutch partners (Nijmegen, Eindhoven and GMDC);
- coordination at the level of NUFFIC;
- coordination at UDSM level.

N.B. The coordination at the level of the individual projects will be one of the subjects to be discussed in the third chapter of this report.

2.2.2 Joint Coordination at the Dutch Side

In March 1985 the Head of the foreign relations office of the CUN presented a paper to the Dutch central steering committee that explained the managerial problems at the Dutch side of the Inter-University Link in a historical perspective.

(N.B. This paper was not translated into English and forwarded to UDSM. UDSM was only aware of this paper after reading the Briefing Document of the present evaluation)

This document highlights the most fundamental internal contradiction in the Dutch inter-university development cooperation, that is: the autonomy of the various faculties in relation to training and research versus the need for a stronger central management structure.

This dichotomy in the structure of the Dutch universities (which goes much further and deeper than development cooperation only) is clearly represented in Willemsen's paper where he explains that the Faculties will defend their conceptual and scientific autonomy also in relation to the cooperative link, but have at the same time their viewpoint that the cooperative link as such is agreed at a central level and as a consequence all cost for central coordination and management has to be paid at a central level.

According to the minutes of the central steering committee this controversy led to discussions in the committee in 1985 and 1986 concentrating around the issue that the faculties and sections ('vakgroepen') had their reserves to make 0,5 staff position available for more coordination and central management at the level of the office for foreign relations (bureau buitenland) of the Nijmegen University. Only because NUFFIC insisted on doing so, this position was created after quite some time, with the special purpose to improve the coordination of the cooperative link.

On 13 December 1985, the PUO-commission wrote to the Dutch Central Steering Committee in relation to the acceptance of the third phase of the cooperative link. The PUO-commission criticises the Central Steering Committee for not being able to strengthen the coordination and management structure of the link.

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The PUO committee adds that it will put more emphasis on organisation and management of each project when valuing the separate projects.

2.2.3 The Coordinating Role of NUFFIC

Although there exists quite some documentation on the Dutch side of the cooperative link, (i.e. the minutes of the meetings of the Central Steering Committee, the PUO-project advices and some other correspondence) that was studied by the evaluation team, the evaluators were only allowed too short a time for interviews with parties involved at the Dutch side of the cooperative link. Therefore, the evaluators could only get a limited insight into the interaction process between PUO/NUFFIC and the Dutch partners of the link.

The evaluation team has observed that the Dutch university institutions and persons involved in the day-to-day implementation of the link, do consider this implementation primarily as their responsibility. The role of NUFFIC is seen as a financial facilitator rather than as a coordinator or policy-maker.

The study of the documentation reinforces the impression that, although NUFFIC asked some years ago for more coordination, it was itself not in the best position to promote such a coordination adequately. This opinion is reflected by the fact that the suggestions of the 1983 external evaluation for a better management of the link, according to a professional standard, have not led to a structural change in the relation between NUFFIC and the university partners in the Netherlands.

The evaluation team has observed that NUFFIC's role is going to change considerably because of the fact that the Dutch Ministry for Development Cooperation will change the organisational structure of the University Cooperation Programme in such a way that:

- NUFFIC will be the executor of the University Cooperation Programme on behalf of the Ministry, but has no responsibility any longer for the approval of the new projects;
- the Ministry wants to approve each project individually, and not a cluster of projects within a cooperative link.

Because of these changes it can be expected that the NUFFIC - on behalf of the Ministry - has to perform a stronger coordinating and monitoring role and that the emphasis will be put more on individual progress and less on the cooperative link.

2.2.4 Coordination at the UDSM-level

The coordinative task at the UDSM-level is fulfilled by the Directorate Postgraduate Studies/Links and Projects Office which is directly supervised by the Office of the Vice Chancellor. Since a full time officer is in charge of the cooperative links (Mr.B.K.C. Bali), direct contacts have become much easier.

It was not an easy task for the evaluation team to assess the role and function of the Central Steering Committee at the UDSM-side, as no minutes of this committee were available, with the exception of the minutes of the meeting where the external evaluation report 1983 was discussed.
As mentioned already, the Tanzanian and the Dutch Steering Committees had a joint meeting in January 1985 on the third phase of the cooperative link.

The evaluation team values it positively that all project proposals that are formulated in Dar es Salaam need the approval of the Central Steering Committee before they can be sent to the Netherlands.

The interaction between the coordinating levels in Dar es Salaam and in the Netherlands, however, remains not so easy to be realised. Project advice from NUFFIC, but also most of the papers from the Netherlands Central Steering Committee, are written in the Dutch language, and only translated occasionally. The evaluation team has come to the conclusion that apart from the exchange of letters, there hardly exists any exchange of documents between the central levels in the Netherlands and Dar es Salaam, a point which needs attention in the future.

2.3 Conclusions

As overall observation of the evaluation team it can be stated that during the third phase the main impact of this Inter-universitary Link has been the sum of the impact of the individual projects.

The Inter-universitary Link functioned primarily at the level of the functional departments and much less at the central university level.

Coordination activities have been primarily of a logistic nature. Information exchange at the Dutch side was primarily to keep the different project staff informed about the progress of the other projects, but was not intended to a joint decision making.

Backstopping activities took place, but mainly at a project to project level and seems to more dependent on individuals who are at a certain moment related to the various projects than that it formed a structural part of the Inter-University Link as such.

The 'Centrale Begeleidingscommissie' discussed problems, but did not function as the Management Committee at the Dutch side of the Inter-University Link. As a result the 'central level' could not adequately contribute to backstopping and the solution of serious problems of individual projects.

The Central Steering Committee of UDSM did not function effectively for quite some years, but this has changed now. Although this Committee has to approve each individual project, the impact of it on the link is not very clear.

Better communication between the central levels could have contributed to the solution of some serious problems and probably could have prevented the deterioration of the relationship in the Electrical Engineering Project.
In the final chapter of this report we will formulate some recommendations that might help to overcome some of the structural problems in the cooperative link which we have discussed in this chapter.
3. THE EFFECTIVENESS OF THE COOPERATION

There are 7 projects in the cooperative link, namely:
3.1. Central Science Workshop
3.2. Microbiology
3.3. Organic Chemistry
3.4. Dentistry
3.5. Medicine
3.6. Electrical Engineering
3.7. University Press

These projects will be subsequently presented and discussed in the paragraphs of this chapter.

3.1 The Central Science Workshop

3.1.1 History

In 1981 it was decided by the UDSM and the CUN to start a project with the aim to establish a central multi-functional technical workshop which is able to give adequate support to the Science Faculty in performing teaching and research. The phases of financing were: (Dutch component only)

Total amount spent up to 31-12-1987: Dfl. 2,375,872.

The Dutch assistance to the CSW-project consisted of:
- training of staff on-the-job and abroad;
- supply of materials;
- financing a new building;
- improvement of organisation, management and technical capabilities of the workshop;
- attachment of two expatriates.

3.1.2 Implementation of the Link

The first phase was based on the assumption that the project could be finished within 3 1/2 years. However, it became clear very soon that the planning was unrealistic. Especially the construction of the new building, a key element in the plan, took considerably more time than foreseen, and was finished in 1986. Also acquiring qualified staff, training of staff and setting up a good organisational and management structure was much more difficult than foreseen.

Therefore, it was decided to extend the project with a second phase. It was anticipated that the project could be phased out in 1988/1989.

In the internal evaluation report of June 1988 it is stated that the CSW has become a well-known workshop within and outside the UDSM.
But that report also made clear that the CSW was not yet viable without external support. Main reasons for this were the weak financial basis of the CSW and the fact that the UDSM had not yet succeeded in finding a Tanzanian manager. It was also mentioned that the plan of operations for 1985-1988 was (again) too ambitious. Limitations related to the specific Tanzanian situation were insufficiently taken into account, like the unavailability of foreign exchange, financial restrictions of the UDSM, much time spent on on-the-job training, low salaries causing private activities of personnel during office hours, etc. Due to these limitations and the fact that the few academic staff members there were, were on training abroad, the CSW had not yet develop a design capability. Almost all the jobs done by the CSW were repair jobs. Furthermore, it was concluded in the internal evaluation report that too few jobs were received from within the Faculty of Science. One of the reasons given for this was that the departments of the Faculty were requested to supply the spares for the repair jobs. Usually they had not budgetted for this and also the CSW had no budget for it. Another reason was the wish of the departments to have and utilise own technicians to do immediate repair service.

In June 1988 a demand for a third phase was presented to NUFFIC. Main reasons for an extension of the project were:
- A Tanzanian general manager had not yet been found;
- The steady supply of components and spares which were not available on the local market, had proven to be an absolute necessity;
- The CSW needs a design capability, which had not yet been developed. For setting up a design group a third expatriate was asked;
- A number of trainings planned for 1985-1988, had not yet taken place.
In addition four new trainings were planned.

The NUFFIC has approved the third phase, except the establishment of a design group and a third expatriate. It is assumed that during the third phase the assistance of expatriates can be phased out.

### Staffing and Staff Training

The actual staffing situation is as follows:
- Electronics 12
- Mechanics 13
- Glassblowing 2
- Office 2

Total 29 (including 2 expatriates)

Among the present staff are two Dutch expatriates; one is the overall manager of the workshop and the other chief technician electronics.

The approved establishment is 33, so there are 4 vacancies. Up to mid 1988, 21 Tanzanians underwent training in various institutions as indicated below:
- 5 Electronics at CUN;
- 3 Electronics at Philips International Institute;
- 1 Electronic at Nairobi (Xerox and comp. interface);
- 5 Mechanics at CUN;
- 1 Glassblower at University of Salford;
- 5 Electronics at UDSM diploma course;
- 1 Electronic at Dar Technical College (dipl.).
According to the plan of operations 1988-1990, a staff establishment of 38 is necessary for a normal workload, taken into account absence due to training and taken into account the future withdrawal of the expatriates. Given the actual presence of 27 Tanzanians in the CSW, this means that 11 new staff members have to be recruited.

In the same plan of operations a training programme is presented consisting of 16 trainings of which:
- 3 already in implementation stage;
- 9 already planned for the second phase but not yet implemented;
- 4 additional trainings.

Regarding the staffing and training the following difficulties were encountered:
- The number of qualified candidates available for training is very limited. This has caused serious delays in the training programme;
- Up to now it has been impossible to find a suitable candidate to become general manager;
- The post of Head of the Mechanical Section has been vacant for about 2 years due to a long illness and subsequent death of the concerned chief technician;
- Electronic technicians from the Technical College do not have the required standard so that much on-the-job training is necessary;
- Training in the Netherlands, especially in electronics, is insufficiently geared towards the Tanzanian situation. This means that for training of electronic technicians possibilities elsewhere (Kenya, India) should be considered;
- Rapid change in technology and equipment requires a continuous training programme.

3.1.4 Inputs from the Netherlands

As has been described earlier, the Netherlands Ministry for Development Cooperation provided, through NUFFIC, an amount of Dfl. 2,375,872 up to 31-12-1987.

Furthermore, that ministry recruited and financed (partially) two expatriates. The present expatriate manager arrived in April 1984 and is due to leave in September 1989. The chief technician arrived in February 1983 and is due to leave in February 1990.

The CUN executed five short-term consultancies in the period 1984-1986 and another one in 1988. Furthermore, CUN buys and ships all the required equipment and spares that have to be imported for the CSW. The CUN has also organised a number of trainings (see 3.1.3). The CSW is satisfied about the quantity and quality of the backstopping of CUN, and it considers the cooperation between the UDSM and CUN as good.

3.1.5 Observations and Conclusions

1. The mission had the impression that the CSW has developed a good capability to do repair jobs for the Faculty of Science and other clients within and outside the UDSM. In addition to this the CSW wants now to develop a design and construction capacity, as foreseen in the original set up of the CSW.
The mission has the opinion that a decision whether or not the CSW should develop these new capacities can only be taken after a thorough discussion on actual and future function and objectives of the CSW (see also point 2).

Besides the above mentioned positive judgement regarding the technical capability, the mission has concerns related to the function of the workshop, the financial management and sustainability of the workshop and the way the vacancy of the post of the general manager can be filled.

2. In the years 1986, 1987 and 1988 the Electronic Section of CSW has done 102 jobs for the departments of the Faculty of Science, 143 jobs for other faculties of the UDSM and for Muhimbili Medical Centre and 142 jobs as consultancies (external clients). In 1986, 1987 and 1988 the Mechanical Section did 226 jobs for the departments of the Faculty of Science, 44 jobs for other faculties of the UDSM and 68 for outside clients. The Glass-blowing Section works mainly for the Faculty of Science and outside clients while the Woodwork Section has almost only clients outside the UDSM.

The Mechanical Section estimated the production value, using prices of private repair workshops, of its jobs done for the UDSM in 1987 at 421,000 TSh. For the jobs done for other faculties than the Faculty of Science an amount of 45,000 TSh was invoiced.

The invoice value of jobs done for outside clients was in 1987 157,860 TSh for the Mechanical Section, 203,265 TSh for the Electronic Section and 133,995 TSh for the Glassblowing Section, totalling 495,120 TSh.

Apart from the above mentioned official jobs, there was a growing number of not-registered private jobs, especially in the Electronic Section. These jobs were partly done during office hours and partly after these hours. For the Electronic Section, the number of private jobs is estimated by CSW management to be of the same order as the total of officially registered jobs.

These figures indicate that the CSW is only to a small extent a service institute for the Faculty of Science, which is its official objective. This situation gives rise to some critical questions:
- Are there no more repair jobs to be done within the Faculty? If there are more jobs, why are they not presented to the CSW?
- If the above figures reflect the demand side for repair jobs, should then the objective of the CSW be changed? What are then the consequences for the management of the CSW?
- As far as the Electronic Section is concerned, is it wise to allow the number of private jobs to grow to a number about equal to the number of official jobs and to allow that an important part of that work is done in official working hours? There is a great danger that in such situation official jobs get such a low priority that they will be delayed and that little marketing is done to attract official jobs. Furthermore, it is profitable for CSW workers to accept potential official consultancies as private jobs.
The mission understood that CSW-management intends to register the private jobs which might be a first step to control the situation.

3. For the third phase an amount of about 2 million TSh a year is budgeted for raw materials, spare parts and salaries (to be financed through NUFFIC). The UDSM contributes about 200,000 TSh a year plus the charges for electricity, water and insurance to finance the running costs of the CSW. The net income from consultancies available for the CSW is estimated at about 200,000 TSh a year. Given these figures it is difficult to see how the CSW can survive after the financial support from NUFFIC has been phased out. When these figures of the running costs are compared with the estimates of the production value and invoice value of the jobs (mentioned under 2), questions also arise about the (economic) efficiency of the CSW and/or the pricing policy of the CSW/UDSM. It is of utmost importance that a thorough analysis of the financial situation and the economic efficiency of the CSW takes place. On the basis of such an analysis a financial policy can be set up, aimed at arriving at financial sustainability.

The kind of financial policy and financial structure and the way of costing jobs will depend on the chosen objectives for the CSW. If the UDSM wants that the CSW becomes a self-financing institute, then the CSW should become a self-balancing unit with financial autonomy. That means that all jobs should be costed, also those from the Faculty of Science.

If the CSW will be mainly a service institute for the Faculty of Science, the CSW can be financed by the Faculty and then only jobs from outside the Faculty will be charged for.

Actually, there exists a situation that the CSW is officially a service institute for the Faculty and is financed by the Faculty, the UDSM and NUFFIC, while in practice it is for a great deal an institution that services clients outside the Faculty (most of them even outside the UDSM).

4. Since 1985 several initiatives have been taken to find a Tanzanian manager for the CSW to take over the work of the expatriate manager. For reasons beyond the control of the managers of the CSW project all the initiatives were without result. In the beginning of 1988 it was decided that an interim management team should be formed to take over the responsibilities of the expatriate manager as long as no Tanzanian manager has been found. Actually, the management team consists of the Head of the Mechanical Section of the CSW and an academic staff member of the Physics Department, who is available for the CSW 2 hours a day.

There is only a rough division of tasks and responsibilities between the two members of the management team and no time schedule how and when responsibilities and tasks will be transferred from the expatriate manager to the management team.
The evaluation missions has the opinion that a management team, and the actual composition of it, is far from an ideal solution. Furthermore, the functioning of the management team has not been well-considered beforehand.

3.1.6 Recommendations

1. The mission recommends that a thorough analysis will be made of the actual functioning, efficiency and financial structure of the CSW. This study can possibly be done by the Faculty of Commerce and Management, within the framework of its commission from the Vice-Chancellor to evaluate the income generating institutions of the UDSM.

2. Using the results of the above mentioned study, the Faculty of Science should reconsider the objectives and tasks of the CSW. After that, clear management guidelines and a sound financial structure should be set up, which are in line with the chosen objectives and tasks of the CSW.

3. The CSW and the UDSM should continue to try with great effort to find a Tanzanian manager, who can take over the responsibilities of the expatriate manager.

3.2 Microbiology

3.2.1 History

Cooperation between the Faculties of Science of the UDSM and the CUN started in 1979. After a phase of orientation, a more concentrated approach was desirable. The first phase of the cooperation lasted until 1981. After an interim year, a second phase was agreed over 1983-1985.

This second phase (of the cooperation) included four special projects, viz:
- chemistry;
- botany;
- zoology;
- mathematics.

An internal evaluation report appeared in October 1985. The mathematics project was no success, due to lack of interest in Nijmegen. The botany and zoology projects were finished early 1987.

Some general conclusions of the 1985 evaluation report were:
- the planning was too ambitious;
- there is a lack of good candidates and lack of good trainers in Dar es Salaam to realise the staff training programme;
- lack of a good communication between Dar es Salaam and Nijmegen on one hand and between the CUN and NUFFIC on the other hand;
- a serious delay in the implementation of the plans was caused by the slow decision making process at NUFFIC.

In 1986, it was decided to continue the cooperation with the Faculty of Science in two "autonomous" projects, viz organic chemistry and microbiology.
For the project of microbiology an amount of Dfl. 700,000 was allocated for a period of 3 years, plus two expatriates. Microbiology is a joint project of the Departments of Botany and Zoology.

The objective of the project was to establish a Microbiology Unit at the Faculty of Science of the UDSM. The activities of the project were:
- setting up a microbiology laboratory;
- development of a B.Sc. course in microbiology;
- training of M.Sc. students and Ph.D. candidates;
- start of a research programme in the fields of medical herbs, biogas production from waste water, biological nitrogen fixation and biodegradation.

3.2.2 Implementation of the Link

1986 was still a year of transition of the earlier Science projects towards the new situation.

The first Dutch long-termer arrived in February 1987 with a delay of 4 months. The second one arrived in August 1987 with a delay of 10 months due to organisational problems.

The curriculum for the B.Sc. course was ready for submission to the Faculty Board, Academic Planning Committee and Senate at the end of 1987. Since then the curriculum has been approved and courses have been started for the academic year 1988/1989.

One Tanzanian staff member has been trained at Ph.D. level. In October 1988 two staff members are on Ph.D.-training and one on M.Sc.-training. The academic staff of the microbiology project counts actually 7 members, of which two expatriates. Because 3 staff members are on training only 4 staff members are available for the project.

Since 1987 the training and staff exchange/research programme was executed more or less according to planning.

The project is satisfied about the backstopping from the CUN. There is frequent communication and the supply of the equipment and the organisation of the trainings is good.

The project has also established contacts with other scientific centers in Africa.

The project presented in October 1988 a plan of operations for 1989-1991. Apart from a continuation of the activities started during the first phase, this plan of operations contains some new elements, like:
- the title of the project is changed into "applied microbiology";
- one of the aims is to establish an applied Microbiology Unit within the Faculty of Science. A unit has its own budget and staff establishment. Until now the microbiology project has the status of a section. A section has no own budget and staff establishment. Some of the staff members of the project belong to the Department of Botany and others to the Department of Zoology.
Up to now the project has had no locally financed expenditures, but when that will be the case, it will be part of the botany budget;
- more effort will be put into carrying out consultancies for outside clients. It is hoped that in future thanks to consultancy income, the Microbiology Unit can become independent from foreign financial aid;
- two more staff members will be trained at Ph.D. level;
- a gradual transfer of responsibilities of the expatriate staff to the local staff.

It is foreseen that after 1991, a third phase will be necessary to strengthen the position of the Unit and "to make it more independent from the Departments of Zoology and Botany", with a possibility of upgrading to departmental level. After 1991 the assistance of one expatriate remains necessary, according to the plan of operations 1989-1991.

3.2.3 Observations and Conclusions

1. The Microbiology Section, started in 1987, has had a rapid and successful start. The laboratory has been set up and is well equipped and organised. The curriculum for the B.Sc. course is ready and courses have been started recently. Furthermore, consultancy work and research have been started and most of the trainings are on schedule.

2. The research topics of the Microbiology Unit are well chosen and relevant for the local situation and development of Tanzania.

3. The Microbiology Section has been set up as a joint project of the Departments of Botany and Zoology. Because it has the status of a section it has no own staff establishment and no own budget as has been described earlier. In order to become more independent the Section prepares now a proposal to become a unit, which will have its own staff establishment and budget.

The mission has the impression that the idea of a joint project of the two departments has not really materialised. It is more an independent project, a little bit supported by the Department of Zoology and a little bit more by the Department of Botany.

The mission is not yet convinced if an upgrading of the Section to a unit and possibly later to a department will be a good development. Growth of the UDSM in terms of number of departments and staff should be limited to what is absolutely necessary, in view of the limited financial and manpower resources of the country.

4. The start of the Section has mainly been realised by two Dutch expatriates and one Tanzanian staff member. With its fast development, good equipment, financial autonomy thanks to foreign aid, the Section runs the risk of ending up in a relatively isolated position within the UDSM. A transfer of responsibilities from the expatriates to Tanzanian staff members as foreseen in the plan of operations for the second phase can promote integration in the UDSM.
5. General reglementation of the UDSM for the distribution of consultancy income is as follows:
30% is for the person who did the job;
30% is for the department concerned;
30% is divided among the staff of the department;
7% is for the administration of UDSM;
3% is for the office of the Dean of the Faculty.
Consultancy fees are based on costs of material inputs and a tariff per hour of 250 TSh.

The Microbiology Section is afraid that this distribution will also be applied to that part of the consultancy income that is necessary to cover the costs of material inputs. Furthermore, the Section has the opinion that 250 TSh/hr is not enough to make consultancies financially attractive for the departments. Therefore, the Section likes to start a discussion with the UDSM-administration to reconsider the consultancy fees and the distribution of it.

3.2.4 Recommendations

1. The Section should be aware of the risk to become relatively isolated within the UDSM. Integration of the Section in the UDSM should be a special point of attention.

Furthermore, attention should be paid to run not too fast, in order to avoid that some people get lost or that it will be too difficult to integrate later on those who are now on training abroad.

2. A decision whether or not the Section should become a unit should be based on a well-considered analysis of what the future tasks and position should be of the microbiology entity in view of the needs of scientific training and research. The decision should not be based on a general feeling that it is better to be independent.

3. The UDSM and the Microbiology Section should soon start a discussion on the calculation and distribution of consultancy fees, with the aim to arrive at a "legalised" consultancy fee policy of the Microbiology Section.

The UDSM can consider to give the Section permission to have its own bank account in order to administer its own consultancy income.

4. The mission has been informed that the available office and laboratory space is not sufficient in the near future. To solve this, four possibilities are considered:
- to construct an extra floor on top of the existing building;
- to extend the existing building;
- to construct a new building;
- to rehabilitate a room on top of the building, meant for air-conditioning equipment, but out of use since many years.

The mission recommends to search for the least cost solution and to investigate also the possibilities to find unused space in buildings of other departments or faculties.
3.3 **Organic Chemistry**

3.3.1 **History**

Organic chemistry started as a "special project" in the second phase (1982-1985) of the Science project (see 3.2.1). It continued as an "autonomous" project since 1986. The budget available for 1986-1988 mounted to Dfl. 300,000, plus one staff member via DGIS suppletion programme (although two expatriates had been asked for).

The internal evaluation 1982-1985 came to the conclusion that this project could, in principle, be financially autonomous at the end of 1988.

In the planning 1986-1989, the previous conclusion is readjusted. The planning is based on the assumption that Dutch personnel (and financial?) support will be needed until 1992-1993.

The objectives of the project were to assist the Organic Chemistry Section of the Chemistry Department of the Faculty of Science in carrying out teaching, consultancies, training and research. The research in the project concentrates on natural product chemistry like medicinal phytochemistry, agro-phyto-chemistry and strigol research.

3.3.2 **Implementation of the Link**

At the time of approval of the second phase (1986) there has been a discussion between NUFFIC and the project about the required staff establishment for the Organic Section and related to that the required number of expatriates and Ph.D. trainings in the project. The project planned for 7 staff members, which was the basis for the demand of 2 expatriates and 3 Ph.D. trainings. Initially the NUFFIC approved only 1 expatriate and 1 Ph.D. training. After presentation of a staff development plan and a calculation of the workload in the Section the NUFFIC agreed to plan for 7 staff members and to finance 3 Ph.D. trainings. A second expatriate was not approved. Argument for this are not clear. Therefore, the Organic Section counted the last few years only 6 staff members (4 Tanzanians, 1 Pakistani and 1 Dutchman) instead of the required 7.

In the progress report 1986-1987 it is stated that some of the activities which were originally planned, were delayed or not carried out at all, mainly for two reasons:
- Approval plan of operation 1986-1988 was severely delayed by NUFFIC and finally approved at the end of 1987;
- Shortage of manpower due to non-approval of the second expatriate.

Activities that could not be started up were:
- The B.Sc. course applied chemistry;
- The foundation of the Tanzanian Chemical Society.

Furthermore, only part of the planned new equipment could be received and also an expansion of the number of consultancies was impossible due to lack of staff. Since 1986 only 2 consultancies have been carried out.
The progress report concludes that the main progress of the project was in the field of research. It is hoped that in the next phase more consultancy work can be done, in order to increase the financial self-reliance of the Section.

In October 1988 the Section presented a plan of operations for the period 1989-1992. The general objectives of the project remain unchanged, but more emphasis will be given to research activities, consultancies and the introduction of a new B.Sc. programme in applied chemistry and the training of technicians. Two of the planned consultancies are a gas chromatography course for personnel from private laboratories and a refresher course for chemist teachers at secondary schools.

A new aspect is also that the Organic Chemistry Section asks the NUFFIC to sponsor 3 M.Sc. students per year, who are studying at the UDSM. That is the only way to get more M.Sc. students. (Costs are estimated at about Dfl. 7,500 per student per year.)

The new plan of operations reveals also that both parties (UDSM and CUN) "are of the opinion that the aim to develop an independent Organic Section (staffwise) with qualified Tanzanian staff members should be realised at the end of 1993/1994".

However, in view of the Tanzanian economic outlook, financial support will probably remain necessary after 1993, especially for imported instruments, spares and materials. If that is not provided it might be impossible to maintain the instruments and to continue the research, acquired and initiated with NUFFIC support.

3.3.3 Observations and Conclusions

1. The mission has a positive judgement on the subjects of research of the Department, namely medicinal phyto-chemistry, agro-phyto-chemistry and synthesis of strigol analogues. These subjects are all related to the Tanzanian situation and are relevant for the development process in Tanzania.

Another positive aspect is the establishment of a local section of Napreca and the organisation of a regional conference of Napreca by the Chemistry Department.

2. Most of the chemistry graduates are actually employed as teachers at secondary schools. It seems that the actual demand for chemistry teachers and chemists for institutions and industries is high enough to justify the actual intake of chemist students.

A special programme in applied chemistry seems to be useful for those who are going to work as professional chemists in chemical, analytical or related laboratories. That programme can make the organic chemistry education more useful for industries and institutions.
3. Given the facts that one Tanzanian staff member has been nominated as Head of the Department of Chemistry, another staff member is still writing his dissertation, the successor of the Dutch staff member has not yet been recruited and that possibly the Pakistani staff member is going to leave in 1989, the staffing situation has deteriorated.

Nevertheless, the Organic Section stated in its plan of operations for 1989-1992 that the not yet implemented activities of the plan 1986-1988 can be carried out during 1989-1992. Given the experience during the period 1986-1989 and in view of the actual staffing situation it is questionable if the plan of operations for 1989-1992 is realistic.

4. The project has not received a short team consultancy from CUN in the field of organic chemistry since longtime. The project coordinator for CUN paid the last visit to UDSM in 1982.

Nevertheless, the project does not complain about the backstopping from CUN. The trainings in Nijmegen are well organised and equipment and materials are provided in time. In 1988 a technician from CUN came on a short mission for the rehabilitation of the drainage system of the laboratories.

5. Some staff members remarked that the sandwich-approach for Ph.D. training was not ideal. Due to the fact that the dissertation has to be written in Dar es Salaam, not enough guidance can be obtained from the professor of the CUN. Furthermore, back at the UDSM, the Ph.D. candidate is so much involved in teaching and other activities at the university, that finishing the dissertation is very much delayed.

3.3.4 Recommendations

1. The mission has a positive impression of the results of the cooperation so far, and recommends that further support is given in order to fulfil the objectives of the programme of cooperation and to make the Organic Section sustainable.

2. In view of the investment done in new equipment, the mission supports the demand for the training of technicians in order to use and maintain this equipment.

3. To make the organic chemistry teaching programme more relevant for (economic) development, it is recommended to start a course in applied chemistry as soon as possible.

4. The mission has the impression that a staff number of 7 is justifiable. Therefore, 3 more staff members should be trained for Ph.D. in the period 1989-1992 and one Dutch expatriate should help to fill the gaps.
5. It is recommended that the Section develops its plan of operations further into a more output oriented plan in terms of number of students to be trained, number of teaching hours to be conducted, quantity of research, number of consultancies, etc. The plan should also indicate how the model of M.Sc.-training/research/consultancy can be implemented. It should be helpful if the to be recruited Dutch expatriate has some experience with such a model.

6. In the budget for 1989-1992 it should be shown how much money will and reasonably can be made available by the UDSM for financing the recurrent costs of the Organic Section. With that information it can be decided how much money is necessary from NUFFIC to cover the recurrent costs of the Section.

Furthermore, a financing plan of the recurrent costs for the medium term should be drawn up showing how the assistance from NUFFIC can be phased out and taken over by the UDSM. In view of the difficult economic situation in the country it might be necessary that this financial support from NUFFIC continues even after 1992 (see also 7).

7. In view of the investment done in new equipment, teaching facilities and research it is important that the UDSM will be in a position to get enough financial resources and access to foreign exchange in order to run and maintain the facilities. As long as the economic situation in Tanzania is such that the Tanzanian Government cannot fulfil this demand from the UDSM, the NUFFIC should consider to give (limited) financial support for imported materials and spares.

This applies not only to the organic chemistry project but also to the other projects of the cooperative link.

3.4 Dentistry

3.4.1 History

The dentistry project started in 1979 with a first phase of 3 1/2 years and lasted - including an extension of 1 year - till the end of 1982. A second phase was agreed for a period of three years (1983-1985). In this phase the sub-project of Morogoro (extension training and field-research) was given a high priority.

The external evaluation of 1983 concluded that there was a lack of coordination between the Ministry of Health, the Muhimbili Medical Centre and the various donors (Finida, Danida and NUFFIC).

Now coordination takes place in meetings of the Executive Consultative Committee (ECC) which comprises the Ministry, the University, Muhimbili Medical Centre and all the coordinators who represent the donors (Danida, NUFFIC and Finida).

Further, the external evaluation of 1983 concluded that a staff development plan was lacking and that there was a high failure rate, leading to a low output.
In 1985 a third phase for three years was agreed upon, covering the years 1986-1988. This phase followed the policy line from the first phase with a strong emphasis on training and staff development.

In September 1988 the internal evaluation report 1986-1988 was published.

<table>
<thead>
<tr>
<th>Budget</th>
<th>Period</th>
<th>Amount Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>phase 1</td>
<td>1979-1982</td>
<td>Dfl. 902.000</td>
</tr>
<tr>
<td>phase 2</td>
<td>1982-1985</td>
<td>Dfl. 1,062.000</td>
</tr>
<tr>
<td>phase 3</td>
<td>1986-1989</td>
<td>Dfl. 1,000.000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>Dfl. 2,964.000</td>
</tr>
</tbody>
</table>

3.4.2 Implementation of the Link

- The internal evaluation report of September 1988 stresses that the initial aim "a self-sufficient dental division run by Tanzanians" is on its way to be realised but has not yet been reached.
- The budget for the third phase included: 3 long-term lecturers, 13 short-term working visits, 1 working visit to Nijmegen and 9 fellowships.
- Further, the third phase includes: some dental equipment and teaching materials, running cost for the Morogoro centre and literature.
- In 1985 the establishment of the dental school was planned at 15 staff members. This number has in the meantime been increased to 19.
- Appropriate Dutch long-term and short-term lecturers have been assigned, however, some discontinuity in their replacements was experienced.
- At the moment there are 3 Dutch and 3 Finnish expatriate long-term staff assigned to the division. The Finnish experts concentrate on Post Graduate training only.
- At the moment the total number of students is 42. The number of applicants is below the capacity; however, it is expected that the remaining places will be used by students from the SADCC-countries. Staff training is expected to result in a sufficient number of qualified staff members in 1992.
- Due to some delays (late recruitment of Dutch staff and late approval of the Ph.D. proposals) there will be need for some extension of the project.
- A modest research programme (e.g. appropriate dental materials for the tropics) is on the way.
- A suitable site for a Dental Teaching Unit for the Morogoro extension programme has been planned, but funds are not yet available.
3.4.3 Main Observations during the Evaluation Mission

1. It was observed that the dentistry programme has been able to achieve to integrate the work of the Muhimbili Division with the National Oral Health plan and to devise a curriculum which is tailormade for Tanzania and which include community/preventative and curative oral health care.

At the same time the donors involved with the division (NUFFIC and Finida) and the donor involved in development and implementation of the National Oral Health Plan (Danida) seem to coordinate their activities successfully. The Executive Consultative Committee, which comprises the Ministry, the University, Muhimbili Medical Centre and the project coordinators representing the three donors (NUFFIC, Finida and Danida) meets every month to coordinate the activities of the plan and training of dental officers, dental assistants etc.

2. The next phase should be seen as an extension of the present phase since implementation was delayed and funds left over can be used for the next phase.

A special budget item for maintenance and replacement of spare parts has been included in the budget. This may be realistic, but it could indicate that the Ministry of Health may not be prepared to increase the recurrent budget to cover for maintenance costs. In order to avoid that after the project is terminated the division would not be able to keep the present standards, the Ministry should be convinced to take responsibility for the maintenance and operations costs.

3. The staff students ratio is relatively high. When making the first national plan it was expected that the Division would get an intake of at least 25 students. This, however, proved to be too ambitious and the present planning is based on an intake of 10 Tanzanian students.

The proposed increase in staff, which was based on an intake of 25 students should now be seen in the light of an expected intake of 15 undergraduate students from SADCC countries, since the dentistry division will most probably be appointed as the regional dental school for the SADCC countries. During the Regional Chief Dental Officers meeting in March 1989 a decision to this respect is expected.

4. Taking the return of staff on training into account it may be required that expatriate staff from the Netherlands would have to stay till the end of 1990, since the Finida staff will only be engaged in postgraduate training.

5. Enthusiasm for an Institute of Dental Public Health in Morogoro seem to have faded since no permanent 'home' could be found. Field training is still a successful component of the curriculum of the dental school.
During this training dental students get exposed to their responsi-
bilities as "manager" of a district oral health team which is
supposed to undertake health education programmes in collaboration
with the general health services and to run the district dental
clinic. Due to the bad shape of the equipment in the district dental
clinics, support is being solicited from donor agencies for the
purchase of "appropriate kits".

6. The management of the division is in the hands of a Tanzanian Head
of Division of Dentistry, who is assisted by a Management Team, of
which Finida and NUFFIC coordinators are members.

The Management Team meets once a month. The coordinator for academic
matters at the moment is a Finida expert and the assistant
coordinator undergraduate studies is Dr. van Reenen.

3.4.4 Recommendations

1. It is recommended to the Executive Consultative Committee to
undertake a joint but external evaluation to monitor the progress of
implementation of the National Oral Health Plan and the contribution
of the Dental School at the Muhimbili Centre and to collect feedback
on the "tailor made" curriculum and its impact on oral health in the
rural areas.

It is recommended that NUFFIC would contribute to the costs of this
external evaluation, which should include a fieldbased assessment in
at least one urban and one rural setting.

2. It is recommended that the division of Dentistry will prepare a Plan
of Operations for the year 1989 and 1990, which should be seen as an
extension of the present phase due to the late start of the
activities and the late arrival of the experts.

This Plan of Operations should be output-oriented and should list
all the activities which will be undertaken to achieve the outputs
expected.

3. It is recommended that the increase in the staff establishment
should be based on the actual enrolment from the SADCC countries
which may not reach 15 very soon.

4. It is recommended to phase out expatriate staff from the Netherlands
by the end of 1990. After that period it may be necessary that
NUFFIC support will continue for some time in order to assist in
supervision of Ph.D. work and acquiring spare parts to keep
equipment functioning.

5. It is recommended that during 1989 and 1990 special attention is
paid to on the job training of technicians and supply of equipment
in order to improve on maintenance, replacement and repair. It is
recommended to involve short-term experts through the PUM programme.
3.5 Medicine

3.5.1 History

The cooperation between the Faculty of Medicine in DSM and the Faculty of Medicine of CUN started in 1917. On the preliminary and the first phase (1977-82) information is only available from the external evaluation report of September 1983 (page 45-50).

After a general cooperation with no less than 15 departments of the Faculty in 1980, the plan of operations 1982-85 brought back the cooperation to a 'basic project' component and a 'specific projects' component. The project covers 4 areas:
- community medicine;
- psychiatry;
- medicine;
- laboratory services.
A 'specific project' may cover the elements: long-term staff, fellowships, short-term teachers, consultants and equipment. The basic project may cover all elements except long-term staff.

The 1983 external evaluation report concluded that this system of a 'basic project' and 'specific projects' has not contributed to a more structural approach in the cooperation.

3.5.2 Finance

<table>
<thead>
<tr>
<th>Budget phase</th>
<th>Period</th>
<th>Amounts allocated</th>
</tr>
</thead>
<tbody>
<tr>
<td>phase 1</td>
<td>1977-82</td>
<td>Dfl. 1,827,000 + 39,5 man years</td>
</tr>
<tr>
<td>phase 2</td>
<td>1982-85</td>
<td>Dfl. 682,300 (basic project)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dfl. 1,061,800 (specific project)</td>
</tr>
<tr>
<td>phase 3</td>
<td>1985-87</td>
<td>Dfl. 200,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dfl. 3,771,100</td>
</tr>
</tbody>
</table>

(N.B. It should be noted that the Faculty of Medicine of CUN had requested Dfl. 980,000 for this link. NUFFIC/PUO, however, have only allocated Dfl. 200,000.)

3.5.3 Implementation of the Link

The internal evaluation report 1982-85 (3+ report) was brought out in November 1986. This report is built up according to the distinction 'basic project' and 'specific projects'. The main conclusions of this report are:
- The basic project
  - In the 2nd phase of the project the self-sufficiency in teaching could not be reached;
  - The number of departments involved in the basic project decreased from 8 to 3, according to NUFFIC's desire;
  - short-term lectureships and consultancies fulfilled expectations;
- the communication between the two partners in the link remains a matter of concern;
- backstopping remains a problem which, rightly, has been pointed to by NUFFIC;
- administrative support is a weak point, both in the Netherlands and in Tanzania;
- Only very indirectly the poor have benefitted from this project which is executed at the top of the health-pyramid.

o Laboratory services
- short-term objectives: to maintain an adequate level in service and teaching;
- long-term objective: to reach self-sufficiency;
- proposed activities: training of staff (one specialist and lecturer in Clinical Chemistry); upgrading of three technicians; laboratory materials;
- short-term objectives appeared to have been feasible; personnel was properly selected;
- cooperation within the project is well established and satisfying;
- backstopping is adequately given by Nijmegen.

o Department of Psychiatry
- short-term and long-term objectives: to improve in- and out-patient care at the Psychiatric Department; to stimulate community based psychiatry; to improve the quality of teaching; to stimulate research programmes; to train junior-psychiatrists;
- in 1984 a new long-term lecturer in psychiatry was appointed; the cooperation moved away from hospital based psychiatry to community based psychiatry; this change linked to persons was critically appraised by NUFFIC;
- feasibility of the objectives is difficult to assess due to changing and unpredictable circumstances, such as change of objectives;
- the quality of the personnel was adequate but it was questioned (by UDSM) whether the right people were recruited;
- backstopping left much to be desired;
- due to the inconsistency of the projects, the development and strengthening of the institution has been only minor;
- the project has contributed only very modestly to the establishment of a proper health care system.

o Department of Community Medicine
- objectives: assist in the development of teaching facilities related to public health; to assist the Ministry of Health in the fields of preventive medicine and disease control; develop capabilities for research;
- the cooperation restricted itself mainly to the Bagamoyo Teaching Unit and the Department of Epidemiology and Biostatistics; Bagamoyo Teaching Unit:
  - as no fellowships were granted, the means used were far below those budgeted for;
  - After Dfl. 100,000 of the budget was consumed to buy new computers for biostatistics the surplus turned into a shortage;
There was a clear shortage of staff during the whole project period; In view of the situation, the 3+ report finds the question of the project "having contributed to solving some of the country's development problems" not relevant at the moment.

Epidemiology/biostatistics:
- Two scientific staff members and two statistical assistants were trained;
- One expatriate's contract (Remme) was extended from 1982 till 1984. In 1985 his position was taken over by Van Asten on a temporary basis;
- Some short-term visits took place;
- Purchase of equipment took considerable amounts;
- One objective in teaching: the production of handbooks, has not been reached;
- Nijmegen has given no backstopping.

Department of Medicine
- Since 1984 the cooperation has concentrated upon gastroenterology and neurology;

Gastroenterology
- In the period 1982-85, 4 fellowships to Nijmegen were realised and 3 short-term visits from Nijmegen to UDSM.
- Diagnostic facilities for in- and out-patients were improved;
- Teaching was improved both to students and postgraduates;
- Research was intensified.

Neurology
- One MMED was trained in neurology in Nijmegen;
- Two technicians were trained in Nijmegen;
- One short-term lecturer lectured in UDSM in 1985;
- A new EEC-machine was provided under the cooperation programme;
- Backstopping contacts with Nijmegen were good.

General conclusions and recommendations from the 3+ report
- Proper staff development programmes have not always been available;
- Trainees were sent to different parts of the world, without informing Nijmegen;
- Concentration on the four main areas (as above) did not work out adequately because of the large "mixed bag", called basic project;
- In the future, the number of focal points of cooperation has to be limited;
- The content of the cooperation has been far from ideal, and was too superficial. More discussion on budget items than on real policy matters took place;
- Backstopping from Dutch side was generally problematic;
- The management of the cooperation has to be improved both at central level and at project level;
- The steering committee in UDSM has to play a more prominent role.

Development of the cooperation 1985-1988
- Already in a letter of 29 March 1983, the PUO-commission of NUFFIC had expressed its concern about the vagueness and lack of integration of the proposals of the Faculty of Medicine of CUN;
- the external evaluation report of September 1983 also observed that the division in a 'basic project' and 'specific projects' had not contributed to a more structural approach in the cooperation;
- as a follow up of the internal evaluation the Faculty of Medicine of CUN was requested by NUFFIC to develop a new and more structural approach to its cooperation with the Faculty of Medicine and the Muhimbili-hospital;
- In 1984-85, agreements continue to exist between NUFFIC and CUN with respect to a request for reconsideration of some parts of the second phase that were not accepted by NUFFIC (second and third priorities) and that were rejected again after reconsideration;
- In 1985 the Faculty of Medicine of CUN presented a proposal for the third phase of about Dfl. 1,000,000. This proposal was rejected by the PUO-committee as being insufficiently problem-oriented; At this point UDSM should have been involved in the formulation of a new proposal;
- Instead, an amount of Dfl. 200,000 was granted to wind up the existing cooperation;
- These developments have led to some irritations in the relationship between NUFFIC and the Faculty of Medicine of CUN (ref. minutes of the meeting of the 'begeleidingscommissie' of 20 December 1985);
- Documents on the further relationship between the Faculty of Medicine Nijmegen and NUFFIC are lacking. According to the minutes of the 'begeleidingscommissie', the relationship has gradually been restored. The PUO committee did not prepare an "additional advice" to the Ministry on this matter as had been indicated before;
- However, NUFFIC remained with its decision not to finance the link between the two faculties of medicine anymore.

3.5.4 Main Observations during the Visit of the Evaluation Mission

1. In 1984 NUFFIC had requested CUN and UDSM to formulate a plan for the third phase with a "problem oriented" approach. After presentation of the plan it was not approved, nor was the request for reconsideration.

   The requested funds for the third phase were Dfl. 1 million, NUFFIC approved only Dfl. 200,000 for phasing out the project.

2. The higher levels of authority of CUN (College van Bestuur and Bureau Buitenland) appear to have been unable to correct this situation.

   In BcF375 (undated, probably early 1985), the Bestuurscommissie of PUO came to the conclusion that also the staff of NUFFIC had not managed to correct the developments adequately, although this should have been its task.

   As a consequence of this lack of management and monitoring at various levels, a project which was indicated as the 'most successful university cooperation programme' by CUN (letter of 12 March 1985), came somewhat prematurely to an end.
It is noteworthy that in all the available documents, the problems of the cooperative link between the two medical faculties seem to be problems between CUN (or rather: the various departments of the Faculty of Medicine of CUN) and NUFFIC. In the documentation, the opinion of the Faculty of Medicine in DSM is nowhere represented.

3. Although the Faculty of Medicine in Dar es Salaam was officially informed by CUN about the decision of the PUO committee in a letter of 27th January and 21st May 1986 it was never really understood what the implications would be and what the main reasons were behind the change in attitude of the NUFFIC. The whole discussion between NUFFIC and CUN on this matter took place without a direct participation of DSM. It was understood that NUFFIC was no longer interested in supporting/financing training of specialists and would be prepared to receive motivated requests for funding of specific activities.

4. In a meeting of March 1986 it was decided that the link between CUN and the Faculty would be continued even after NUFFIC would have been phased out. This meeting was attended by two members of the Faculty of Medicine (UDSM). It was agreed that Nijmegen would try to raise funds for the continuation of the collaboration, for which an identification mission would visit Tanzania. This visit resulted in an agreement between different parties and which was laid down in a Letter of Intent.

This Letter of Intent was signed by the Ministry of Health and Social Welfare in Tanzania and the Steering Committee of the CUN and defines areas of collaboration between:

**Tanzanian side:**
- Ministry of Health
- Faculty of Medicine, UDSM
- National Institute of Medical Research

**Netherlands side:**
- Faculty of Medicine, CUN
- Other Dutch Institutions such as Working Group on Tropical Medicine and the Royal Tropical Institute in Amsterdam.

5. For the Netherlands side this Letter of Intent was meant as a continuation of the good relationships between Muhimbili and CUN, which would now be a collaboration based on "mutual interest" which would generate project proposals for research and training activities for which donors were to be found.

For the Tanzanian side the Letter of Intent was the tail of the NUFFIC programme of assistance to Muhimbili Centre and it was expected that the activities proposed under the letter of Intent would be processed and approved quickly.

Since this has not happened and only a few activities could be financed, the Faculty of Medicine feels as if their interests were not given adequate attention and the finances from NUFFIC were too abruptly taken away.
Especially since some essential pieces of equipment which were obtained during phase two cannot be repaired anymore because of lack of spare parts and foreign exchange.

6. In the opinion of the evaluation mission the phasing out of the Medicine project was too abrupt and did not take into account that certain aspects (e.g. spare parts and foreign exchange for spare parts) should have been phased out over a period of at least three to four years.

7. It is very commendable that the Faculty of Medicine of the CUN in cooperation with other Dutch Institutions has tried to continue the link with the Faculty of Medicine in Tanzania even after NUFFIC withdrew financial support.

However, it should have been made clear to the Tanzanian side that the Letter of Intent did not automatically mean that NUFFIC would finance the listed activities.

3.5.5 Recommendations

1. The two parties who signed the Letter of Intent should make a review of the activities carried out so far and update the expectations as far as funding is concerned.

It is recommended that the Faculty of Medicine of the CUN in cooperation with other Dutch Institutions would pay a visit to Tanzania and that expenses be paid by NUFFIC.

2. It is recommended that based on this progress review, NUFFIC will decide which of the activities suggested could be considered by DGIS and indicate what procedures should be followed for further processing.

3. It is recommended that NUFFIC would consider to approve a small fund for approximately two years in order to:
   . enable those departments which are dependent on spare parts for equipment received through NUFFIC support, to purchase essential spare parts.
   . create a "seed fund" in order to "oil" the collaboration under the Letter of Intent.

3.6 Electrical Engineering

3.6.1 History

The cooperation between the Department of Electrical Engineering of UDSM and TUE goes back as far as 1979, when TUE took over the assistance to the Department that so far was given by the German GTZ.

Electrical Engineering is one of the 4 departments of the Faculty of Engineering.
The years 1980 and 1981 formed an initial phase. The second phase, which included a general support to both the teaching and the staff training of the department covered the period 1982-1985. In 1985 the so-called 3+ internal evaluation report was written. This report formed the basis for the third and final phase from 1986 to 1989.

During that third phase less attention should be paid to teaching and training, and more to research. Two areas of research were selected, viz. 'rural electrification' and 'telecommunication for rural development in Tanzania'.

3.6.2 Finance

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<tr>
<td>phase 2</td>
<td>1983-85</td>
<td>Dfl. 900.000</td>
</tr>
<tr>
<td>phase 3</td>
<td>1986-89</td>
<td>Dfl. 1.000.000</td>
</tr>
<tr>
<td>Total amount allocated</td>
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<td>Dfl. 2.298.000</td>
</tr>
</tbody>
</table>

3.6.3 Implementation of the Link

The first internal evaluation report (3+ report) was published in October 1985.

The most important observations and conclusions of this report are the following:
- the main objective of the project to turn education of electrical engineering into a self-supporting institution had not been realised. It is expected that this objective will not be reached until 1990, when the staff development plan will be completed;
- 5 Tanzanian staff got industrial training in the Netherlands and 2 got a Ph.D. training;
- apart from 2 long-term Dutch staff (Bakker & Dijkstra; together 6.5 manyears) short-term staff exchange developed according to the planning: 11 TUE staff were involved who covered altogether 6.3 manyears; 11 UDSM-staff was involved in the programme covering a total of about 12.3 manyears.
- the staff situation was problematic. One reason was that two highly qualified staff took jobs in government service;
- short-term visiting staff from Eindhoven was used rather for filling gaps (regular teaching) than for more staff training;
- the scientific Tanzanian staff was of good quality. However, this did not yet result in high quality research due to the heavy teaching load;
- the cooperative link was weakly integrated into the general activities of the Faculty; the Dutch coordinator was the only one involved in administration. Staff members that were not directly involved hardly gave any support at all.
3.6.4 Developments since 1986

In September 1986, the PUO-committee accepted the proposal to continue the link with the Department of Electrical Engineering by means of two research projects:
- development of rural electrification; and
- telecommunication for rural development.

The available documentation only gives a very superficial insight in these project proposals; the question whether they would be feasible could not be answered on the basis of the available documentation and is still open.

The PUO-committee gives the following motivation for accepting the proposals:
"The desire for more research is often expressed.... However, generally most of the time of expatriate teachers is spent on teaching. Now that it looks as if there is sufficient Tanzanian staff available, it seems wise to proceed energetically with research activities; the choices make clear that it is looked for a connection with the need of rural development in Tanzania."

After September 1986 the relationship between TUB and the Head of Department of Electrical Engineering is deteriorating. Most of this process is contained in correspondence between TUB and the Head of Department, the Dean of Engineering and the Vice Chancellor of UDSM. Both sides have a different perception of what happened and although trials on both sides have been undertaken to solve the problems the situation did not improve. It is not easy to trace all details of all the relevant events exactly, but the following seem relevant:

1. In the minutes of the central steering committee (Centrale Begeleid­nings-committee) of 2 February 1987 is mentioned that satellite communication is stagnated due to the departure of one of the professors from Eindhoven. A part of the project has been put in the fridge and NUFFIC has been informed. The project on rural electrification so far remained a paper one. Tanzania has submitted an annual plan, as agreed. However, this plan is insufficient and negotiations continue.

2. In the minutes of the central steering committee of 13 November 1987, reference is made to a correspondence between UDSM and Eindhoven. The project on rural electrification is stopped in June 1987. UDSM appears (according to these minutes) unable to start projects autonomously.

Regarding telecommunication, Eindhoven is no longer prepared to work with the project-manager in DSM because of a seriously disturbed relation. It is decided that Eindhoven will no longer correspond on this project; this responsibility will be taken over by the steering committee.

2 quotation from Bc 470
3. The minutes of the central steering committee of 11 March 1988 mention that the relationship between UDSM and Eindhoven has de facto been ruptured. The committee will have a task to try to finish the relationship. Negotiations are continuing to find some way out and to formulate a small proposal to wind up the project. No new discussions on possible future projects will be started.

4. In a document written by the Head of the Department of Electrical Engineering, Prof. Mgombelo, (dated 12 April 1988) an analysis of the present situation is given from the Tanzanian side.
Two arguments are used:
1. The Department of Engineering is shocked by the lack of interest from Eindhoven in the project of Rural Telecommunication since the departure of Prof. Arnbak from TUE.
2. The Department had hoped to receive clear guidance and support from TUE for developing and writing the rural electrification proposal.
The Head of the Department recommends that an independent committee should be appointed to review the project and to try to solve the crisis.

3.6.5 Main Observations during the Field Visit

1. Despite the relevant training a number of staff members of EED have received at the TUE and the relevant research topic in rural telecommunication and electrification, (and the very positive support of NUFFIC) the link between the TUE and EED broke down.
A fundamental question whether the Department was ready to undertake research could not be answered. It is clear that due to the pressure of NUFFIC - to change from teaching to research overnight - may have pushed both departments (in Eindhoven and in Dar es Salaam) in research too quickly.

2. During the period under evaluation a crisis of confidence between the TUE (EE) and UDSM (EE) developed and the two research programmes on rural electrification and telecommunication were stopped by TUE. TUE has made an offer that it would be prepared to continue the link with a programme for professional training of young members of staff at post graduate level.
EED has expressed that it believed that the problems could be solved by having an independent analysis made of the situation.

On June 5th 1987, during a meeting of the Working Group Tanzania it was reported that the "complaints" dating from 1986 were discussed by Dr. Merck and Dr. Ngombelo confidentially and mutual understanding was achieved. It was decided that there was no need to discuss these points any more.
Apparently the situation did not improve.
3. In the opinion of the mission the crisis of confidence was a result of communication problems between persons involved in the cooperation and of changes in project responsibilities on the TUE side which increased the confusion on the UDSM side.

The reason why TUE didn't want to cooperate on the research anymore was that it was not confident that the UDSM, EE Department would be able to carry out the agreed research.

The main reason for this was that in their opinion the Head of Department was not up to professional standard, didn't have the right personal attitude to collaborate with people in Eindhoven and had financial requests which were too demanding.

Later TUE refused to work together with the Head of Department any more because of his "so-called inability". Finally, TUE requested the VC of the UDSM that another person than the Head of Department would be involved.

This was interpreted on the UDSM side as an ultimatum, based on a one-sided interpretation of facts.

The UDSM (EE) believed that the early people involved on the TUE side were more interested and willing to collaborate than the people who replaced them. Staff members of the EE Department who worked at the TUE felt that they had become victims of internal developments at the TUE and therefore were not taken as the "counterparts" but as students.

It is clear that both sides have a different perception of what has happened and about each others roles and positions. The mission has not been asked to judge who is the main responsible for the failure to establish a fruitful cooperation regarding the two research projects. Such a judgement is only possible after a further and detailed investigation.

4. It is noticed that the Steering Committees have not been able to prevent (or solve) the crisis of confidence between the two partners and also NUFFIC has not taken any action to try to get the partners to solve the problems.

5. In the opinion of the mission the crisis has reached the point of no return and in order to safeguard the investments done in the communications project an alternative option should be investigated.

Recommendations:

1. It is recommended that the present project between TUE and the EE of UDSM should not be restarted anymore. The installation of the telecommunication equipment by the engineers appointed by TUE should be seen as the last activities carried out under this link.
2. It is recommended that NUFFIC commissions an independent party to investigate:
   - the relevance of research proposals for such development;
   - the feasibility of the research proposals;
   - the main conditions for successful and effective collaboration.

Based on this investigation, it should be decided whether the proposed research activities should be supported and which University would be most appropriate.

3.7 University Press

3.7.1 History

In 1982 a feasibility study was carried out on the rehabilitation of the Dar es Salaam University Press (DUP). In 1984 a plan of operations for the rehabilitation was written and presented to NUFFIC for financing. The aim of the project was to rehabilitate the DUP in its function as scientific publishing house which is able to efficiently serve the academic activities of the university with reading and teaching materials and printed matter.

The main components of the project were:
   - reconstruction of the buildings and relocation of the equipment;
   - supply of some new equipment and spare parts;
   - training of staff members;
   - adjustment of DUP's internal organisation, (establishment of a production office and adjustment of the budget system);
   - assistance by 1 long-term Netherlands operational consultant and 3 short-term consultants.

The execution of the Netherlands input in the project was the responsibility of the Graphic Media Development Centre (GMDC) in the Hague. The duration of the project was planned at 3 years (1986-1988).

The NUFFIC approved the project in the second half of 1986 for a total amount of Dfl. 550,000, with the condition that more attention should be paid to improvement of the management and organisation and to a market-oriented approach, than had been done in the project proposal.

3.7.2 Implementation of the Project

Due to late approval by NUFFIC, the project started 1 year later than planned. In February 1987 GMDC undertook a short-term consultancy to the UDSM to update the plan of operations. The long-term consultant arrived in Dar es Salaam in December 1987. Furthermore, in 1987 4 trainings in the Netherlands were implemented and 60% of the equipment had been bought, shipped and installed.

A serious bottleneck in the execution of the project was the fact that the reconstruction of the building, planned to be done at the start of the project, was seriously delayed. This was caused by a disagreement between the DUP and the University Library on the utilisation of the buildings concerned and by the fact that the UDSM had not budgetted its contribution to the reconstruction costs.
In September 1988 GMDC wrote a letter to the DUP that if the reconstruction could not be realised soon, the execution of the project will be greatly endangered. GMDC stated that in such a situation GMDC can no longer accept its responsibilities in the project. Finally in October 1988 the Vice Chancellor of the UDSM took a decision in favour of an immediate start of the reconstruction and budgetted an amount of 3 million TSh for this reconstruction.

3.7.3 Observations and Conclusions

1. The capacity utilisation of DUP is extremely low and the production management and financial management extremely weak, according to an evaluation study conducted by the Faculty of Commerce and Management. Only thanks to grants in the form of raw materials, subsidies of the UDSM in the form of no charges for electricity, water, buildings and insurance and no provisions for depreciation, the DUP has been able to pay the salaries of its personnel.

Furthermore, the DUP does not realise its first objective, that is to serve the UDSM with reading and teaching materials. It mainly produces for outside clients, while at the same time the UDSM looks for outside printers to get printing done.

Without a tremendous improvement in the production management and financial management of the DUP, the technical reorganisation of the DUP is not worthwhile.

In the planning for the preparatory year (1986) it was foreseen that GMDC would conduct a study an aspects of exploitation of the DUP and that measures should be prepared for the internal reorganisation of the DUP. It is a serious omission that this has not been done.

Fortunately, in March 1988 the UDSM commissioned the Faculty of Commerce and Management to evaluate the management, efficiency and profitability of the DUP. The draft report of that study has recently been presented to the Vice-Chancellor. The conclusions and recommendations of the study are far reaching. The Vice-Chancellor has declared that he will soon take drastic decisions in order to create conditions for an improvement of the management of DUP.

2. The project started more than one year later than planned, due to late approval by NUFFIC and delay in the recruitment of the Dutch expatriate. Furthermore, the UDSM and GMDC did not take enough initiatives to start up preparatory activities, as indicated in the plan of operations, which could have been done even without the presence of the expatriate. At the moment the project is almost two years behind schedule.

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3. The study on the reconstruction of the buildings and the realignment of the equipment, and the selection and purchase of most of the equipment has been carried out. Also most of the planned trainings took place. On the contrary only one of the four short-term consultancy missions of GMDC took place (February 1987). If there would have been more missions maybe some of the actual problems related with the production management and financial management could have been identified earlier and actions for improvement could have been taken.

4. It is a positive development that the Vice Chancellor has solved the conflict about the reconstruction of the building. However, it might still take some time before that reconstruction will be realised because the discussions with a contractor have not yet been started. Also the exact costs of the reconstruction are not yet known. It might be that the 3 million TSh budgetted by the UDSM for the reconstruction is not enough. The DUP asked for 5 million TSh.

5. According to the project document, the Dutch expatriate should advise and assist the director of DUP in all his activities related to the rehabilitation and development of DUP and should assist the printing house manager in building up the production office. However, due to the weakness of the management and of the organisation structure, up to now he has not been able to contribute substantially to an improvement of the management and organisation of the DUP and to strengthening of the role of the production office. His main contribution has been the preparation of the technical realignment of the equipment and some preparatory activities for strengthening the production office.

His functioning is furthermore hampered by the fact that since longtime the function of printing house manager is performed temporarily by an acting manager.

6. It is an omission that in the actual programme of action for 1988-1990 no mention is made of activities aimed at improving the management and organisation. The programme consists mainly of activities related to the reconstruction and relocation of equipment and organisation of trainings and visits.

3.7.4 Recommendations

1. Decisions to start up a process leading to a drastic improvement of the production management and financial management of the DUP should be taken soon. The evaluation study of the Faculty of Commerce and Management forms a good basis to start up this process. This Faculty is also willing to provide assistance during that process of change.
2. The GMDC, the NUFFIC and the Dutch expatriate should get a copy of the report of the evaluation study and a discussion should start between these partners on the conclusions and recommendations of the study and on the role the GMDC and the expatriate can play in the reorganisation of the production management and financial management. The conclusions of these discussions should be included in the programme of action for 1988-1990.
4. GRADUATE AND EMPLOYER SURVEY

4.1 Background

The ToR for the evaluation requested the evaluation mission to look into the effectiveness of the cooperation and the relationship to development problems.

One of the criteria to evaluate this relationship was in what way do graduates play a role in addressing these development problems. Another was whether employers of alumni had any influence on the contents of the training at the University.

From the outset of the evaluation it was clear that the evaluation mission would not be able to carry out a full-fledged tracer study. It was therefore decided to request some staff members of the University to carry out a limited graduate and employer survey in organic chemistry, electrical engineering, dentistry and microbiology. The survey was carried out by Mr. Brij K.C. Bali, Dr. Mohammed S. Sheya and Mr. Anael M. Nnko. The complete report is attached as an appendix. Objectives, methodology, results and recommendations are found in the following paragraphs.

4.2 Objectives

The main objectives of the study are:

a) to indicate and review the various tracer related studies taken place for the selected programmes;
b) to obtain feedback on the appropriateness of selected programmes of study as training for the different kinds of employment actually followed by the graduates;
c) to specify the Government and University directions in the future in relation to the selected programmes.

The selected programmes in the above study shall include areas in organic chemistry, electrical engineering, dentistry and microbiology, in which the Dutch Government is presently providing financial assistance to the University of Dar es Salaam.

4.3 Methodology

In order to meet the first objective of the study, a review of known tracer studies conducted in the country and relevant to this report was carried out. The discussion of this is given in Section 4 of the report 'Graduate and Employer Survey', Appendix IV.

For the second objective, a general purpose questionnaire was designed and used for the Graduate and the Employer surveys. A random selection of employers was made for each study area. The selection was made on the basis of the high number of University of Dar es Salaam graduates recruited and the area of operation of the employer.
In this study, the selected organisations were all based in Dar es Salaam. In this way, it was possible to reach both the employer and graduates within the short period available. Separate questionnaires were issued to the graduates and their employers. Appendix 1 and 2 of the report 'Graduate and Employer Survey', Appendix IV, outline the sample questionnaires used and Appendix 3 of the report 'Graduate and Employer Survey', Appendix IV, gives the list of organisations visited.

The third objective of the study was accomplished through a literature study on one hand and by conducting personal interviews with various policy and decision makers in the Government and at the University of Dar es Salaam.

4.4 Summary of Results

A study was conducted to review graduates performance and the relevance of their training programmes as offered by the University of Dar es Salaam in the field of organic chemistry, electrical engineering, dentistry and microbiology. Both the graduates and their respective employers were visited and relevant information was obtained from them (either through interviews or questionnaires - Appendix 1 and 2 of the report 'Graduate and Employer Survey', Appendix IV). The findings of this study are presented in the main body of this report. Sixteen institutions were visited and questionnaires distributed to more than twenty-one employers and thirty-eight graduates in the above fields of study. Appendix 3 of the report 'Graduate and Employer Survey', Appendix IV, gives the list of institutions visited.

In general, in all the above four fields of study, the University of Dar es Salaam graduates fared quite well at work and their work performance compared favourably with other graduates in similar fields trained elsewhere. From the findings of the study, it was also apparent that both theoretical and practical skills acquired by the above graduates were relevant and appropriate to the local needs. Furthermore, the above graduates were rated to have "good" to "very good" theoretical knowledge and practical skills. Furthermore, they were found to be flexible, innovative and adaptable to the local situation.

Without an exception, the majority of the graduates irrespective of the field of study, maintained a professional relationship with their former departments, either through consultancy or advisory service. In most cases the departments reciprocated favourably in cherishing such a relationship.

Through this study, it became evident that there is a need to restructure some of the courses to reflect the changing needs of the society and those of the emerging technical developments. Apart from the programme in Dentistry, it was found out that so far, departments have not sought expert opinion of others outside the University when developing new curriculum and/or revising or consolidating the existing teaching programmes.
4.5 Recommendations

4.5.1 Curriculum Development

It is highly recommended that departments involve other experts in the field outside the University in developing and drawing up teaching programmes that will reflect the current needs of the industry vis-à-vis the society.

It is understood that the Faculty of Engineering has already taken such an initiative in establishing curriculum development committees which encompass practicing engineers.

4.5.2 Graduate Follow-up

Departments and faculties should conduct regular studies to review the performance of their graduates in the field with a view of soliciting feedback on graduates' performance and the relevance of their training programmes to the needs of the society.

4.5.3 Practical Applications

It is recommended, where possible, teaching programmes should be biased with practicals to reflect the growing needs and demands of the present working environment. This, however, should be done without undue sacrifice to the basic theoretical skills that are necessary and a prerequisite in enhancing graduates' analytical and enforcing their academic capacity.

4.5.4 Teaching Support

It is imperative that theoretical knowledge at the University is consolidated by real life examples through laboratory work and/or field study. As a prerequisite to sound implementation of such programmes, provision should be made for the right equipment that students can lay their hands on while at the University. Departments should therefore strive to equip their laboratories with the necessary and adequate equipment that reflect the present state of the art in the associated study areas.

4.5.5 In-service Training

Employers should be required to provide a formal practical training of newly recruited graduates. This training should be stipulated, guided and supervised by qualified persons in the field at the place of work. This will invariably enhance and consolidate the theoretical skills acquired by the graduate at the University. Such training programmes have already been recommended by the Institutions of Engineers Tanzania but it is not known whether other professions in the above fields of study encourage similar training programmes.
4.5.6 Professional Affiliation

The advantage to be gained by both the graduates and the departments through establishing regular contacts cannot be underemphasised. One possible gain is the mutual benefits through the exchange of experiences and expertise. It is therefore recommended that departments should encourage and cherish such contacts. These could be maintained through extended invitation to hold and/or attend departmental seminars, Professional Development Programmes (PDD) and open days. It should also be encouraged to invite employers to the departments to talk at departmental seminars as a way of maintaining professional links with the people in the field.

4.5.7 Future Studies

In view of the hurried nature in conducting the present study, it is recommended that a more comprehensive and thorough study be conducted as a follow-up study to encompass among others graduates and employers who are up-country and to deepen further the scope and analysis of the present study.
5. **CONCLUSIONS AND RECOMMENDATIONS**

In the first paragraph of the concluding chapter of this report we will review the main conclusions on the ongoing projects of the cooperative link. The second paragraph deals with new project ideas, whereas the final recommendations are represented in the third, fourth and fifth paragraph of this chapter.

5.1 **Review of the ongoing Projects**

5.1.1 **The Central Science Workshop**

1. The mission had the impression that the CSW has developed a good capability to do repair jobs for the Faculty of Science and other clients within and outside the UDSM. In addition to this the CSW wants now to develop a design and construction capacity, as foreseen in the original set up of the CSW.

2. A decision whether or not the CSW should develop these new capacities can only be taken after a thorough discussion on actual and future function and objectives of the CSW (see also point 2).

3. The mission has concerns related to the function of the workshop, the financial management and sustainability of the workshop and the way the vacancy of the post of the general manager can be filled.

4. The kind of financial policy and financial structure and the way of costing jobs will depend on the chosen objectives for the CSW. If the UDSM wants that the CSW becomes a self-financing institute, then the CSW should become a self-balancing unit with financial autonomy. That means that all jobs should be costed, also those from the Faculty of Science.

5. A management team, and the actual composition of it, is far from an ideal solution. Furthermore, the functioning of the management team has not been well-considered beforehand.

5.1.2 **Microbiology**

1. The Microbiology Section has had a rapid and successful start. The laboratory has been set up and is well equipped and organised. The curriculum for the B.Sc. course is ready and courses have been started recently. Furthermore, consultancy work and research have been started and most of the trainings are on schedule.

2. The research topics of the Microbiology Unit are well chosen and relevant for the local situation and development of Tanzania.

3. The idea of a joint project of two departments (botany and zoology) has not really materialised. Microbiology is more an independent project, a little bit supported by the Department of Zoology and a little bit more by the Department of Botany.

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4. The mission is not yet convinced if an upgrading of the Section to a unit and possibly later to a department will be a good development.

5. A transfer of responsibilities from the expatriates to Tanzanian staff members as foreseen in the plan of operations for the second phase can promote integration of the Department of Microbiology in the UDSM.

5.1.3 Organic Chemistry

1. The mission has a positive judgement on the subjects of research of the Department. The subjects are all related to the Tanzanian situation and are relevant for the development process in Tanzania.

2. Most of the chemistry graduates are actually employed as teachers at secondary schools. It seems that the actual demand for chemistry teachers and chemists for institutions and industries is high enough to justify the actual intake of chemist students.

3. A special programme in applied chemistry seems to be useful for those who are going to work as professional chemists in chemical, analytical or related laboratories. That programme can make the organic chemistry education more useful for industries and institutions.

4. The staffing situation of the Department has deteriorated during the past few years and had to be subject of serious reconsideration. In view of the actual staffing situation it is questionable if the plan of operations for 1989-1992 is realistic.

5. Unless some problems the Department of Organic Chemistry does not complain about the backstopping from CUN. The training in Nijmegen is well organised and equipment and materials are provided in time.

6. The sandwich-approach for Ph.D. training is not ideal and could be reconsidered.

5.1.4 Dentistry

1. The dentistry programme has been able to integrate the work of the Muhimbili Division with the National Oral Health plan and to develop an adequate curriculum for Tanzania which includes community/preventative and curative oral health care.

2. The Ministry of Health should be convinced to take responsibility for the maintenance and operations costs of the dentistry programme.

3. The staff-students ratio is relatively high. The proposed increase in staff, which was based on an intake of 25 students should be seen in the light of an expected intake of 15 undergraduate students from SADCC countries.
4. Taking the return of staff on training into account it may be required that expatriate staff from the Netherlands would have to stay till the end of 1990.

5. Enthusiasm for an Institute of Dental Public Health in Morogoro seem to have faded since no permanent 'home' could be found. However, field training is still a successful component of the curriculum of the dental school.

6. The management of the division is in the hands of a Tanzanian Head of Division of Dentistry, who is assisted by a Management Team, of which Finida and NUFFIC coordinators are members.

5.1.5 Medicine

1. The plan for a third phase of the Medicine project with a "problem oriented" approach (1984) was not approved by NUFFIC. The higher levels of authority of the cooperative link appear to have been unable to correct this situation.

2. NUFFIC has not managed to correct the developments adequately, although this should have been its task.

3. As a consequence of this lack of management and monitoring at various levels, a project which was indicated as the 'most successful university cooperation programme' by CUN came somewhat prematurely to an end. The discussion between NUFFIC and CUN on this matter took place without a direct participation of UDSM.

4. In 1986 The Medical Faculty (UDSM) and the Ministry of Health signed a Letter of Intent to continue the good relationship.

For the Tanzanian this Letter of Intent was considered as the tail of the NUFFIC programme and it was expected that new activities would be processed and approved quickly.

5. Since this has not happened and only a few activities could be financed, the Faculty of Medicine feels as if their interests were not given adequate attention.

6. In the opinion of the evaluation mission the phasing out of the Medicine project was too abrupt and did not take into account that certain aspects (e.g. spare parts and foreign exchange for spare parts) should have been phased out over a period of at least three to four years.

7. It is very commendable that the Faculty of Medicine of the CUN in cooperation with other Dutch Institutions has tried to continue the link with the Faculty of Medicine in Tanzania after NUFFIC withdrew financial support.
5.1.6 Electrical Engineering

1. Despite the relevant training of a number of staff members of EED have received at the TUE and the relevant research topic in rural telecommunication and electrification, (and the very positive support of NUFFIC) the link between the TUE and EED broke down. Therefore, the fundamental question whether the Department was ready to undertake research has remained answered.

2. During the period under evaluation a crisis of confidence between the TUE (EE) and UDSM (EE) developed and the two research programmes were stopped by TUE. EED has expressed that it believed that the problems could be solved by having an independent analysis made of the situation.

3. In the opinion of the mission the crisis of confidence was a result of communication problems between persons involved in the cooperation and of changes in project responsibilities on the TUE side which increased the confusion on the UDSM side. The reason why TUE didn't want to cooperate on the research any more was that it was not confident that the UDSM, EE Department would be able to carry out the agreed research.

4. It is noticed that the Steering Committees have not been able to prevent (or solve) the crisis of confidence between the two partners and also NUFFIC has not taken any action to try to get the partners to solve the problems.

5. In the opinion of the mission the crisis has reached the point of no return and in order to safeguard the investments done in the communications project an alternative option should be investigated.

5.1.7 University Press

1. The capacity utilisation of DUP is extremely low and the production management and financial management extremely weak, according to an evaluation study conducted by the Faculty of Commerce and Management.

2. In March 1988 the UDSM commissioned the Faculty of Commerce and Management to evaluate the management, efficiency and profitability of the DUP. The conclusions and recommendations of the study are far reaching. The Vice-Chancellor has declared that he will soon take drastic decisions in order to create conditions for an improvement of the management of DUP.

3. The project started more than one year later than planned, due to late approval by NUFFIC and delay in the recruitment of the Dutch expatriate. At the moment the project is almost two years behind schedule.

4. It is a positive development that the Vice Chancellor has solved the conflict about the reconstruction of the building.
5. According to the project document, the Dutch expatriate should advise and assist the director of DUP in all his activities related to the rehabilitation and development of DUP. However, up to now he has hardly been able to contribute substantially to an improvement of the management and organisation of the DUP and to strengthening of the role of the production office.

6. It is an omission that in the actual programme of action for 1988-1990 no mention is made of activities aimed at improving the management and organisation. The programme consists mainly of activities related to the reconstruction and relocation of equipment and organisation of trainings and visits.

5.2 New Project Ideas

The evaluation mission was presented with "new project ideas" for the Faculty of Commerce and Management and the Department of Zoology.

5.2.1 Faculty of Commerce and Management

General information

The Faculty consists of 6 approved departments, namely Accounting, Finance, Marketing, General Management, Personnel and Production. The Personnel and Production Departments have not taken off because of shortage of faculties and manpower.

The Faculty offers a 3 years undergraduate course, a 2 year graduate programme leading to MBA-degree and a 4 year programme leading to Ph.D. degree. Apart from training, the Faculty conducts research and provides consultancy services to governmental, parastatal, and private organisations. The actual intake is about 120 undergraduates and 20 postgraduates per year. Since 1979, when the Faculty started, about 1,000 students have been graduated at the Faculty.

The Faculty has a cooperative link with the University of Sheffield consisting of receiving 1-2 short-term lecturers a year and some financial assistance for equipment and books. There is also a link between the Departments of Accounting and the national Higher Institute of Education in Dublin. This link consists of one long-term staff member, a grant for equipment and some fellowships. At the moment there are also 2 professors from the United States to assist the Faculty in Accounting and Systems Analysis for one year (1988/1989).

Proposal from the Faculty

Because of the urgent need of people trained in Systems Analysis and Business Computing the Faculty plans to start computer courses in 1989/1990. This will only be possible if there is external financial and manpower assistance. The Faculty has only one Tanzanian trained in this field System Analysis and Business Computing is a subject from the Department of General Management but courses can be attended by all students from the Faculty. Furthermore, the Faculty intends to strengthen the Finance Department.
There is a growing demand for finance specialists in the country. However, the Department of Finance is the weakest of the Faculty in terms of number of staff and training level of staff (not a single person trained at Ph.D. level).

Therefore, the Faculty has written a proposal for a cooperation with a Dutch university aiming at setting up courses and research in the field of system analysis and business computing and to strengthen the already existing Finance Department.

Observations and Conclusions

During discussions with the Faculty the mission was informed that the Faculty intends also to start in 1989 the Department for Production Management. Asked so, the Faculty declared that the start of such a department has even a higher priority than the start of courses in System Analysis and Business Computing. Given this priority ranking and in view of the fact that improving the quantity and quality of production managers in the country can contribute directly to the economic recovery of the country, the mission has suggested to the Faculty to write a proposal for a cooperative link aiming at assistance for the establishment of a Department for Production management. Setting up courses in System Analysis and Business Computing link can be elements of such a cooperative link possibly as a joint activity of the Departments of General management and Production Management.

Recommendations

The mission would like to recommend the Faculty of Commerce and Management to prepare a proposal to start a cooperation with a Dutch University or Institution in order to establish a Department for Production Management, which would include courses in System Analysis and Business Computing.

This proposal can be presented through NUFFIC to the Dutch Government. In case the Dutch Government is interested, in principle, a delegation from the Faculty of Commerce and Management could visit the Netherlands to identify/select the best potential partner for the project.

Afterwards the Faculty and the Dutch partner can develop a detailed Plan of Operations which is to be presented (through NUFFIC) to the Dutch Government for approval.

5.2.2 Department of Zoology

History

In the framework of the cooperative link between the Faculty of Science of the CUN and the Faculty of Science of the UDSM the Department of Zoology received in the period 1982-1985 assistance from CUN/NUFFIC in the form of fellowships, equipment, literature and 1 long-term expatriate. This assistance ended in 1985, except the training which were phased out in 1987.
Since then there exists only an indirect link between the Department of Zoology and the CUN, through the microbiology project, which is a joint activity of the Departments of Zoology and Botany.

Proposal from the Department

The Department of Zoology has presented to the mission a proposal for a cooperative link with the CUN, concerning:
- research on the effects of environmental pollutants on the productivity of economically important freshwater fishes;
- training in environmental physiology and toxicology up to M.Sc. level;
- Consultancies with respect to freshwater and environmental pollution for the improvement of fisheries, fish farming, etc.;
- upgrading relevant research facilities.

Observations and Conclusions

Given the priorities of the Dutch Ministry for Development Cooperation regarding cooperative links and regarding the development cooperation with Tanzanian it is doubtful if that ministry is interested to restart financing a cooperative link with the Department of Zoology. But maybe there is a possibility that the research component of the proposal can obtain financing from the Special Research Budget of the Ministry for Development Cooperation. Arguments in favor of such a funding are the economic significance of the research and the ecological aspects of it.

Recommendations

The mission recommends the Department of Zoology to contact the Dutch Ministry for Development Cooperation through NUFFIC or the Netherlands Embassy to apply for funds from the Special Research Budget to undertake the above mentioned research.

In case the project would satisfy the criteria a proposal could be prepared together with e.g. the Department of Zoology of the University of Nijmegen.

In case the Department of Zoology will proceed the presented research it is recommended that the research proposal will be discussed with the Fisheries Department of the University of Wageningen, which has a proven record in development of fish farming systems.

5.3. Recommendations on the ongoing Projects

5.3.1 Central Science Workshop

1. The mission recommends that a thorough analysis will be made of the actual functioning, efficiency and financial structure of the CSW. This study can possibly be done by the Faculty of Commerce and Management, within the framework of its commission from the Vice-Chancellor to evaluate the income generating institutions of the UDSM.
2. Using the results of the above mentioned study, the Faculty of
Science should reconsider the objectives and tasks of the CSW. After that, clear management guidelines and a sound financial structure should be set up, which are in line with the chosen objectives and tasks of the CSW.

3. The CSW and the UDSM should continue to try with great effort to find a Tanzanian manager, who can take over the responsibilities of the expatriate manager.

5.3.2 Microbiology

1. The Section should be aware of the risk to become relatively isolated within the UDSM. Integration of the Section in the UDSM should be a special point of attention.

2. A decision whether or not the Section should become a unit should be based on a well-considered analysis of what the future tasks and position should be of the microbiology entity in view of the needs of scientific training and research. The decision should not be based on a general feeling that it is better to be independent.

3. The UDSM and the Microbiology Section should soon start a discussion on the calculation and distribution of consultancy fees, with the aim to arrive at a "legalised" consultancy fee policy of the Microbiology Section.

4. The mission has been informed that the available office and laboratory space is not sufficient in the near future. The mission recommends a certain creativity for the solution of this problem and to search for the least cost solution.

5.3.3 Organic Chemistry

1. The mission has a positive impression of the results of the cooperation so far, and recommends that further support is given in order to fulfil the objectives of the programme of cooperation and to make the Organic Section sustainable.

2. In view of the investment done in new equipment, the mission supports the demand for the training of technicians in order to use and maintain this equipment.

3. To make the organic chemistry teaching programme more relevant for (economic) development, it is recommended to start a course in applied chemistry as soon as possible.

4. The mission has the impression that a staff number of 7 is justifiable. Therefore, 3 more staff members should be trained for Ph.D. in the period 1989-1992 and one Dutch expatriate should help to fill the gaps.
5. It is recommended that the Section develops its plan of operations further into a more output oriented plan in terms of number of students to be trained, number of teaching hours to be conducted, quantity of research, number of consultancies, etc.

6. A financing plan of the recurrent costs for the medium term should be drawn up showing how the assistance from NUFFIC can be phased out and taken over by the UDSM.

7. In view of the investment done in new equipment, teaching facilities and research it is important that the UDSM will be in a position to get enough financial resources and access to foreign exchange in order to run and maintain the facilities. As long as the economic situation in Tanzania is such that the Tanzanian Government cannot fulfil this demand from the UDSM, the NUFFIC should consider to give (limited) financial support for imported materials and spares.

This applies not only to the organic chemistry project but also to the other projects of the cooperative link.

5.3.4 Dentistry

1. It is recommended to the Executive Consultative Committee to undertake a joint but external evaluation to monitor the progress of implementation of the National Oral Health Plan and the contribution of the Dental School at the Muhimbili Centre and to collect feedback on the "tailor made" curriculum and its impact on oral health in the rural areas.

2. It is recommended that NUFFIC would contribute to the costs of this external evaluation, which should include a field-based assessment in at least one urban and one rural setting.

3. It is recommended that the division of Dentistry will prepare a Plan of Operations for the year 1989 and 1990, which should be seen as an extension of the present phase due to the late start of the activities and the late arrival of the experts.

This Plan of Operations should be output-oriented and should list all the activities which will be undertaken to achieve the outputs expected.

4. It is recommended that the increase in the staff establishment should be based on the actual enrolment from the SADCC countries which may not reach 15 very soon.

5. It is recommended to phase out expatriate staff from the Netherlands by the end of 1990. After that period it may be necessary that NUFFIC support will continue for some time in order to assist in supervision of Ph.D. work and acquiring spare parts to keep equipment functioning.
6. It is recommended that during 1989 and 1990 special attention is paid to on the job training of technicians and supply of equipment in order to improve on maintenance, replacement and repair. It is recommended to involve short-term experts through the PUM programme.

5.3.5 Medicine

1. The two parties who signed the Letter of Intent should make a review of the activities carried out so far and update the expectations as far as funding is concerned.

It is recommended that the Faculty of Medicine of the CUN in cooperation with other Dutch Institutions would pay a visit to Tanzania and that expenses be paid by NUFFIC.

2. It is recommended that based on this progress review, NUFFIC will decide which of the activities suggested could be considered by DGIS and indicate what procedures should be followed for further processing.

3. It is recommended that NUFFIC would consider to approve a small fund for approximately two years in order to:
   . enable those departments which are dependant on spare parts for equipment received through NUFFIC support, to purchase essential spare parts.
   . create a "seed fund" in order to "oil" the collaboration under the Letter of Intent.

5.3.6 Electrical Engineering

1. It is recommended that the present project between TUE and the EE of UDSM should not be restarted any more. The installation of the telecommunication equipment by the engineers appointed by TUE should be seen as the last activities carried out under this link.

2. It is recommended that NUFFIC commissions an independent party to investigate:
   - the relevance of research proposals for such development;
   - the feasibility of the research proposals;
   - the main conditions for successful and effective collaboration.

Based on this investigation, it should be decided whether the proposed research activities should be supported and which University would be most appropriate.

5.3.7 University Press

1. Decisions to start up a process leading to a drastic improvement of the production management and financial management of the DUP should be taken soon. The evaluation study of the Faculty of Commerce and Management forms a good basis to start up this process. This Faculty is also willing to provide assistance during that process of change.
2. The GMDC, the NUFFIC and the Dutch expatriate should get a copy of the report of the evaluation study and a discussion should start between these partners on the conclusions and recommendations of the study and on the role the GMDC and the expatriate can play in the reorganisation of the production management and financial management. The conclusions of these discussions should be included in the programme of action for 1988-1990.

5.4. Recommendations on proposed Activities new Project Ideas

5.4.1 Faculty of Commerce

1. The mission would like to recommend the Faculty of Commerce and Management to prepare a proposal to start a cooperation with a Dutch University or Institution in order to establish a Department for Production Management, which would include courses in system analysis and business computing.

2. This proposal can be presented through NUFFIC to the Dutch Government. In case the Dutch Government is interested, in principle, a delegation from the Faculty of Commerce and Management could visit the Netherlands to identify/select the best potential partner for the project.

3. Afterwards the Faculty and the Dutch partner can develop a detailed Plan of Operations which is to be presented (through NUFFIC) to the Dutch Government for approval.

5.4.2 Zoology

1. The mission recommends the Department of Zoology to contact the Dutch Ministry for Development Cooperation, through NUFFIC or the Netherlands Embassy to apply for funds from the Special Research Budget to undertake the above mentioned research.

2. In case the project would satisfy the criteria a proposal could be prepared together with e.g. the Department of Zoology of the University of Nijmegen.

3. In case the Department of Zoology will proceed with the presented research it is recommended that the research proposal will be discussed with the Fisheries Department of the University of Wageningen, which has a proven record in development of fish farming systems.

5.5 The Future of the Inter-University Link

5.5.1 Observations

1. The Inter-University Link between the UDSM on the one side and CUN, TUE and GMDC on the other side has gone through a period of turbulence, but at the same time has shown a good number of positive results.
The turbulent times relate to the changeover from general assistance in staff development to a more focussed problem oriented approach which for some of the projects was not so easy to adopt to.

2. As overall observation of the evaluation team it can be stated that during the third phase the impact of the Inter-University Link has been the sum of the impact of the individual projects.

The Inter-University Link functioned at the level of the "functional" departments and not at a central University level.

Coordination activities have been of a logistic nature. Coordination at CUN was meant to keep the different project staff informed about the progress of the other projects. The Centrale Begeleidings Commissie discussed problems but didn't function as the Management Committee for the Inter-University Link. For a long time the Central Steering Committee at the UDSM was not functioning, but this has changed now. As a result there was no institution that could help to solve serious problems of the individual projects. A good communication between the Universities at central level could have prevented the deterioration of the relationship in the Electrical Engineering project, the misunderstanding in the Medical Project and the management problems in the CSW and University Press.

3. It was observed, however, that in case of the microbiology project, the Organic Chemistry Department and the medicine project the "mutual" interest of the departments increased and hopefully will ensure a continued link after NUFFIC funding will be withdrawn (as is the case in the Medicine Project already).

5.5.2 Recommendations

1. It is recommended that the Inter-University Link will continue for at least three more years and act as an umbrella for a number of project carried out under responsibility of the functional departments.

2. It is recommended that during the next phase "quality improvement" is taken as the central theme. Special activities within this theme should be further development of the:
   i) Production Management Department within the Faculty of Commerce and Management;
   ii) operationalisation of the concept of the M.Sc. Research-Consultancy, which offers a direct input to industries/institutions with a national interest; and
   iii) integration of the proposed Postgraduate Scholarship Fund with the Research and Consultancy Proposal.
3. It is recommended that the Inter-University Link would pay extra attention to "quality improvement of training, research and consultancy" activities of the functional department by establishing a link between e.g. the IOWO (Institute for research of development of Academic Education) and an independent unit under the Chief Academic Officer in order to train faculties and departments for better efficiency in teaching, research and consultancy. It is recommended that a joint feasibility study is carried out.

4. It is recommended that the coordination-work of the Centrale Begeleidings Commission in CUN and the Central Steering Committee at UDSM will include:
   - development of programmes which are related to quality improvement;
   - close monitoring of progress of projects;
   - increase its capacity to solve problems which cannot be solved at project level (anymore);
   - a more efficient communication between the four Steering Committees;
   - improve the internal coordination among the different projects based at the CUN.

In case projects of other Universities will become part of the Inter-University Link it is recommended that the Centrale Begeleidings Commission will extend its mandate to these project as well.

5. It is recommended that the Central Steering Committee and de Centrale Begeleidings Commission will meet in Dar Es Salaam in the beginning of 1989 in order to:
   - discuss the future of the link;
   - review the progress and to discuss the cost-effectiveness;
   - areas of concentration;
   - coordination between the Universities;
   - approve the different project proposals;
   - how the different projects should be coordinated / managed.

It is recommended that this meeting is carefully prepared by a planning mission of the Head of the Cooperation, links and Projects Section to Nijmegen, Eindhoven and the Hague. In case the project proposal on Production Management is ready, this mission could be joined by the Dean of Commerce and Management or his representative.

6. For all projects for which an extension has been recommended, a Plan of Operations should be completed in the near future. The structure of these Plan of Operations should change and emphasize an "output oriented" planning and include the financial and immaterial contributions of all parties concerned.

Generally speaking, "aid" should not overstretch the capabilities of the functional unit which is supposed to carry out the project activities.
PROGRAMME FOR UNIVERSITY DEVELOPMENT COOPERATION

Terms of reference for the evaluation of the Tanzania cooperative link, between the University of Dar es Salaam (UDSM) and the Catholic University of Nijmegen (KUN), Eindhoven University of Technology (TUE), and the Graphic Media Development Centre (GMDC) of the Government Printing Office in The Hague.

Introduction

The cooperative link has been in operation since 1977 as part of the Programme for University Development Cooperation (PUO). The purpose of the PUO system of cooperative links is to support institutions in developing countries in their efforts to improve their capacities for education and/or research, and thus to make a contribution at the educational, technological or scientific level to solving problems related to those countries' development. Problems that form an obstacle to self-reliance are assigned top priority.

PUO is part of the Dutch government programme of bilateral development assistance. The Minister for Development Cooperation has commissioned NUFFIC to manage the PUO programme. It is therefore NUFFIC that is requesting this evaluation, which is financed from general PUO funds.

Emphasis in the evaluation should lie mainly on the level of the cooperative link as a whole. Although the various projects that make up the cooperative link should be mentioned in the global assessment, it is not the intention that there be a detailed analysis of each separate one.

This cooperative link makes use of the suppletion programme administered by the foreign ministry's Directorate General for International Cooperation (DGIS). This programme is also part of the Netherlands' bilateral assistance. Most of the link's long-term project workers are financed from the suppletion programme. At the request of DGIS, the evaluators should also look at how well the two programmes are working together, and at how effectively the 'suppletion specialists' are functioning in the cooperative link.

The previous evaluation of the Tanzania cooperative link took place in May 1983 and covered the period from 1977 to 1982. The present evaluation covers the five years from 1983 through 1988.
The cooperative link, now in its third phase (1986 - 1989), consists of the following projects:

<table>
<thead>
<tr>
<th>field</th>
<th>Dutch institution</th>
<th>PUO funds</th>
<th>number of 'suppletion specialists'</th>
</tr>
</thead>
<tbody>
<tr>
<td>medicine (ended in December 1987)</td>
<td>KUN</td>
<td>f 375,000</td>
<td>(7)</td>
</tr>
<tr>
<td>dentistry</td>
<td>KUN</td>
<td>f 783,000</td>
<td>3</td>
</tr>
<tr>
<td>organic chemistry</td>
<td>KUN</td>
<td>f 343,000</td>
<td>4</td>
</tr>
<tr>
<td>microbiology</td>
<td>KUN</td>
<td>f 697,000</td>
<td></td>
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<td>central science workshop</td>
<td>KUN</td>
<td>f 130,000</td>
<td>2</td>
</tr>
<tr>
<td>electronics</td>
<td>TUE</td>
<td>f 1,031,000</td>
<td>3</td>
</tr>
<tr>
<td>university printing office</td>
<td>GMDC</td>
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<td>1</td>
</tr>
<tr>
<td>general/coordination</td>
<td></td>
<td>f 47,000</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>f 3,946,000</td>
<td>20</td>
</tr>
</tbody>
</table>

Purpose of the evaluation

The evaluation is taking place within the context of attempts to improve the quality of inter-university development cooperation as well as to measure the effectiveness of projects.

The job of the evaluators is to analyse and assess the activities that have taken place within this cooperative link between April 1983 and July 1988, and to make recommendations for a possible fourth phase (the period 1990 - 1993).

More specifically, the evaluators should:
- analyse the degree to which this cooperative link is consistent with the goals of the PUO programme and the suppletion programme;
- analyse the degree to which the projects are meeting their objectives;
- draft recommendations regarding the continuation of this cooperative link into a possible subsequent phase.

Subjects of the evaluation

The evaluation should concentrate on the analysis and assessment of:

1. what is actually taking place within the cooperative link, and whether or not activities are proceeding according to plan. This will require examination of:
   a. the documents and procedures which have created the activities (Here the relationship between PUO and the suppletion
programme is of particular importance.);
b. the administrative assistance that accompanies the activi-
ties;
c. the effectiveness of the various instruments used in the
projects (long-term specialists, short missions, 
 scholarships for Tanzanian staff members, back-up support 
from the Netherlands, equipment, vehicles, literature), and 
the appropriateness of this combination of instruments.

2. the effectiveness of cooperation, with respect to:

   a. institutional strengthening

      - Has teaching capacity improved in the fields involved in 
        cooperation? Has there been, for example:
      . an upgrading of the staff?
      . curriculum development?
      . improvement in the practicals?
      . improvement in infrastructure?

      - Has research capacity improved?

   b. the relationship to development problems

      - To what extent are the project activities geared 
        towards solving Tanzania's main development problems?
      . Graduates in the fields in which cooperation is taking 
        place: what role are they playing in solving 
        these problems?

      - Has the institution come to play a more significant role 
        in society? Has a study been done to see what has become 
        of alumni, for example? Is the university being 
        commissioned to conduct activities for third parties?

      - How able is the institution to absorb the effects of 
        cooperation, and what are the prospects for these effects 
        lasting even after the Dutch partner has withdrawn?

3. The possibilities for continuing all or some of the projects 
into a subsequent phase, and for initiating projects in new 
high-priority areas:

   - current fields in which there is cooperation:
      . engineering
      . science
      . central services (printing office and workshop)
      . oral health care

   - fields in which cooperation has been suggested:
      . economics and management.
4. Plan for the evaluation:
The evaluation will be conducted by ir. A. Hordijk of Matrix Consultants, and by drs. M. van der Linden of the Netherlands Economics Institute.

The required information will be obtained by:
- studying available documents: primarily the cooperation agreement, project proposals, project reports, correspondence, and reports from meetings of the supervisory committee;
- interviewing relevant people in Tanzania and in the Netherlands.

The evaluation agenda is as follows:
1. study of documents and interviews: first week of October, 1988
2. visit to Tanzania two weeks in October/November 1988
3. preparation of evaluation report in Tanzania and in the Netherlands first week in November 1988

The evaluation report will be submitted to NUFFIC, in English, within six weeks of the conclusion of the mission to Tanzania. NUFFIC will take care of disseminating the report further:
- to DGIS (APO);
- to the University of Dar es Salaam;
- to the Dutch universities and organisations involved in the cooperative link.

Enclosures: - PUO criteria
- description of the suppletion programme

12-7-88
The Netherlands: Education, Training and Research projects in Tanzania

A. University of Dar-es-Salaam, cooperative link

1. project: Central Science Workshop
duration: March 1981 - December 1987
costs: US$ 1,290,440,
plus long term TA: 2 per year
partners: UDSM/Faculty of Science
Catholic University of Nijmegen/Faculty of Science
description: to establish a central, multi-functional technical workshop in support of the teaching and research of the Faculty of Science. A team of skilled technicians is being trained in the areas of electronics, fine-mechanics and glassblowing. The workshop will eventually have a staff of 25 Tanzanian technicians.

2. project: Electrical Engineering
duration: January 1980 - December 1988
costs: US$ 963,530
plus one long term T.A.
partners: Eindhoven University of Technology (EUT)
Department of Electrical Engineering
description: to assist in attaining self-sufficiency in indigenous manpower capacity and capability in teaching, research and consultancy services and to promote, expand and strengthen cooperative research between both departments. During the first period (1980-1982) the emphasis was on BSc teaching and upgrading Tanzanian staff members. Fellowships industrial training for Tanzanian staff members were an interesting feature. During the second period (1983-1985) more attention was paid to create facilities and capacity to do research and development work. In the 1986-1988 period emphasis will be on post-graduate course and staff development (PhD) related to research projects in rural electrification and in telecommunication for rural development.

3. project: dentistry
duration: September 1978 - December 1988 (10 years)
costs: US$ 1,338,620 plus long term T.A.: 3 per year
partners: Faculty of Medicine/Muhimbili Medical Centre
University of Nijmegen/Subfaculty of Dentistry
description: the aim is to attain a self sufficient dental division at MCC for the development of oral health services in Tanzania. The project concentrates on curriculum development, staff training and teaching support, provision of teaching materials and dental equipment. An important element is the Morogoro Field Station for training (students) and research in community dentistry. For the years to come the project will focus on postgraduate staff training (PhD) related to research and on the integration of oral health personnel.
other donors: FINNIDA, DANIDA
Since 1983 coordination meetings on 'oral health development' are being held regularly (also WHO and Ministry of Health participate).
4. project: natural sciences
   (organic chemistry and microbiology)
   duration: September 1979 - December 1988
   costs: US$ 1,181,470 plus 3-4 long term T.A. per year
   partners: Catholic University of Nijmegen/Faculty of Science
   description: the project started as a broad Faculty-Faculty cooperation
   with involvement of the Departments of Mathematics, Chemistry, Botany
   and Zoology. Emphasis was on infrastructure (laboratory facilities)
   and on staff development, both for technical and academic staff.
   Academic staff development mainly comprises (sandwich)-PhD-programmes.
   From 1986 the cooperation will concentrate on two areas
   (with separate projects):
   a. organic chemistry: training of technical and academic
      staff and joint research in 'natural product chemistry'
      (medicinal plants, pheromones, strigol)
   b. microbiology: a microbiology unit will be established
      which will train undergraduate and postgraduate students.
      Through a PhD-staff development programme
      research will be undertaken in nitrogen fixation,
      biodegradation and general microbiology.

5. project: Dar-es-Salaam University Press (DUP)
   duration: 1987-1989 (3 years)
   costs: US$ 263,825 plus one long term T.A.
   partners: UDSM/DUP
   description: the aim of the project is to rehabilitate the Dar-es-Salaam
   University Press in its function as a scientific publishing
   house, able to efficiently serve the academic activities
   of the university with reading and teaching materials.

6. project: strengthening the medical faculty
   duration: 1977-July 1987
   costs: US$ 1,667,825 plus maximum of 12 long term T.A. per year
   (at present 2)
   partners: Muhimbili Medical Centre
   Catholic University of Nijmegen/Faculty of Medicine
   description: the project aims at strengthening the medical faculty/MCC
   in its teaching and service capacity through provision of
   expatriate teaching staff and the training of Tanzanian
   medical specialists and para-medical staff. During the last
   few years the cooperation has been concentrated on:
   laboratory services, community medicine/epidemiology,
   community psychiatry, medicine.
   The project will end in 1987 and at present discussions are
   being held about possibilities of future cooperation in the
   health sector.
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3) BcP 407: Advies over aanvraag 3e fase, NUFFIC
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Projects
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1) BcP 482, 1986-1989
D) Dentistry
1) BcP 445, NUFFIC

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GRADUATE AND EMPLOYER SURVEY
IN
ORGANIC CHEMISTRY
ELECTRICAL ENGINEERING
DENTISTRY
AND
MICROBIOLOGY

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(all from the UNIVERSITY OF DAR ES SALAAM)

NOVEMBER 1988
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Bibliography

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ACKNOWLEDGEMENTS

The authors would like to thank all employers and graduates who provided the invaluable information that lead to the production of this Report and for sparing their valuable time in completing the Questionnaires.

Special thanks go to Dr. M.G. Bilal, Dean of the Faculty of Science for his contribution in proof reading the manuscripts and for his constructive criticism and also to Ms Eva Humbo for her efficient and accurate typing of the Report.
Within the framework of cooperation under the Netherlands Universities Foundation for International Cooperation (NUFFIC), some Departments at the University of Dar es Salaam have established links with sister Departments in the Netherlands in such areas as Electrical Engineering, Organic Chemistry, Microbiology and Dentistry. For the Electrical Engineering discipline, the link was established in January 1980 between the Department of Electrical Engineering, University of Dar es Salaam and a sister Department at the Eindhoven University of Technology. For Dentistry, the link was established in September 1978 between the Division of Dentistry at the University of Dar es Salaam and the sub-Faculty of Dentistry at the University of Nijmegen.

Similar links were established in 1982 between the Faculty of Science, University of Dar es Salaam and the sister Faculty at the University of Nijmegen in the sub-discipline of Organic Chemistry on one hand and in 1986 in the area of Microbiology on another. The Departments responsible for the cooperation on the side of the University of Dar es Salaam were the Department of Chemistry for the project in Organic Chemistry and the Departments of Botany and Zoology for the project in Microbiology. The current phase of cooperation
which will end on 31 December 1989 is preceded by an independent external evaluation mission appointed by NUFFIC. The mission, among other things has to assess and evaluate the existing projects and their viability within the framework of the existing cooperation.

As one of the methods of soliciting information on the possible success or failure of the existing projects, it was thought instructive to conduct a tracer study for the existing projects in Electrical Engineering, Organic Chemistry, Microbiology and Dentistry. It is therefore hoped that the findings of this study will help to shed some light on the relevance and appropriateness of the existing teaching programmes at the University of Dar es Salaam and the adaptability and suitability of her graduates to the local needs of industry and other sectors of the economy.

Furthermore, through the findings of the study, it is hoped to identify the impact of the teaching programmes at the University of Dar es Salaam as evidenced by the quality of her graduates and their performance at their place of work. It is further hoped that the conducted study will help to unveil the new development trends presently taking place at the University of Dar es Salaam and other sectors of the economy.
SUMMARY AND RECOMMENDATIONS

Summary
A study was conducted to review graduates' performance and the relevance of their training programmes as offered by the University of Dar es Salaam in the field of Organic Chemistry, Electrical Engineering, Dentistry, and Microbiology. Both the graduates and their respective employers were visited and relevant information was obtained from them (either through interviews or questionnaires – Appendix 1 and 2). The findings of this study are presented in the main body of this report. Although sixteen institutions were visited and questionnaires distributed to more than twenty-one employers and thirty-eight graduates in the above fields of study. Appendix 3 gives the list of institutions visited.

In general, in all the above four fields of study, the University of Dar es Salaam graduates fared quite well at work and their work performance compared favourably with other graduates in similar fields trained elsewhere. From the findings of the study, it was also apparent that both theoretical and practical skills acquired by the above graduates were relevant and appropriate to the local needs. Furthermore, the above graduates were rated to have "good" to "very good" theoretical knowledge and practical skills.
Furthermore, they were found to be flexible, innovative and adaptable to the local situation.

Without an exception, the majority of the graduates irrespective of the field of study, maintained a professional relationship with their former Departments, either through consultancy or advisory service. In most cases the Departments reciprocated favourably in cherishing such a relationship.

Through this study, it became evident that there is a need to restructure some of the courses to reflect the changing needs of the society and those of the emerging technological developments. Apart from the programme in Dentistry, it was found out that so far, Departments have not sought expert opinion of others outside the University when developing new curriculum and/or revising or consolidating the existing teaching programmes.

Recommendations

(a) Curriculum development

It is highly recommended that Departments involve other experts in the field outside the University in developing and drawing up teaching programmes that will reflect the
(vi)

current needs of the industry vis a vis the society.

It is understood that the Faculty of Engineering has already taken such an initiative in establishing curriculum development committees which encompass practicing engineers.

(b) Graduate follow-up

Departments and Faculties should conduct regular studies to review the performance of their graduates in the field with a view of soliciting feedback on graduates performance and the relevance of their training programmes to the needs of the society.

(c) Practical applications

It is recommended, where possible, teaching programmes should be biased with practicals to reflect the growing needs and demands of the present working environment. This however, should be done without undue sacrifice to the basic theoretical skills that are necessary and a prequisite in enhancing graduates analytical and enforcing their academic capacity.
(d) **Teaching support**

It is imperative that theoretical knowledge at the University is consolidated by real life examples through laboratory work and/or field study. As a prerequisite to sound implementation of such programmes, provision should be made for the right equipment that students can lay their hands on while at the University. Departments should therefore strive to equip their laboratories with the necessary and adequate equipment that reflect the present state of the art in the associated study areas.

(e) **In-service training**

Employers should be required to provide a formal practical training of newly recruited graduates. This training should be stipulated, guided and supervised by qualified persons in the field at the place of work. This will invariably enhance and consolidate the theoretical skills acquired by the graduate at the University. Such training programmes have already been recommended by the Institutions of Engineers Tanzania but it is not known whether other professions in the above fields of study encourage similar training programmes.
(f) Professional affiliation

The advantages to be gained by both the graduates and the Departments through establishing regular contacts cannot be underemphasied. One possible gain is the mutual benefits through the exchange of experiences and expertise. It is therefore recommended that Departments should encourage and cherish such contacts. These could be maintained through extended invitation to hold and/or attend Departmental seminars, Professional Development Programmes (PDD) and open days. It should also be encouraged to invite employers to the Departments to talk at Departmental seminars as a way of maintaining professional links with the people in the field.

(g) Future studies

In view of the hurried nature in conducting the present study, it is recommended that a more comprehensive and thorough study be conducted as a follow-up study to encompass among others graduates and employers who are up-country and to deepen further the scope and analysis of the present study.
1. INTRODUCTION

The University College of Dar es Salaam (UCD) was established in February 1961 by Act of the Tanganyika National Assembly (The University College - Provisional Council Ordinancy No. 6 of 1961). The University College Council that was subsequently established was responsible for the planning of the UCD and preparation of the Draft Act which finally gave the College its legal status.

In December 1960, the Quinquennial Advisory Committee inter alia recommended that the UCD should begin in 1964 with a Faculty of Arts and a Faculty of Science in 1965. The UCD thus became operational at the present Campus in 1964. Together with the Royal College Nairobi, Kenya and Makerere University College, Uganda, the UCD formed the third constituent college of the University of East Africa, the only Federal University in the World that transcended three international boundaries at that time.

On 1st July 1970, the University of Dar es Salaam (UDSM) was established. The establishment of the University of Dar es Salaam was the result of the decision by the East Africa into three independent
Universities serving the needs of Tanzania, Uganda, and Kenya respectively. An Inter-University Committee for East Africa was set up for the purpose of maintaining academic co-operation and continued academic communication between the University of Dar es Salaam and the Universities in Uganda and Kenya.

The University of Dar es Salaam (UDSM) and the Sokoine University of Agriculture (SUA) are the only two University institutions in Tanzania at present. Whereas the latter University was established in July 1st, 1984. The University of Dar es Salaam on the other hand was started with the following objectives:

(i) to train Tanzania's high level manpower personnel;
(ii) to provide consultancy services to the Government of the United Republic of Tanzania and other institutions.

The University of Dar es Salaam offers training to Bachelor's degree and higher degree levels in the following Faculties:

(i) Art and Social Sciences;
(ii) Commerce and Management;
(iii) Engineering;
(iv) Law;
(v) Medicine, and
(vi) Science.

Upto June 30, 1984, the University of Dar es Salaam used to house the Faculty of Agriculture, Forestry and Veterinary Science also, which was subsequently elevated to an autonomous status, when it became the Sokoine University of Agriculture, referred to above.

In order to enable the University to carry out the above functions, a highly trained competent manpower is required to run the University. The University recruits members of staff among its best graduate students. Therefore, staff development and staff training is one of the prime functions in the University planning and is therefore accorded the highest priority.

Since most members of the academic staff join the University as Tutorial Assistants following successful completion of their Bachelor's degrees, it is the policy of the University to train every member of the academic staff to Ph.D level. In the majority of cases, this training is done overseas through the financial assistance of Donor Agencies. The University receives assistance from a number of Donor Agencies including NUFFIC, NORAD, DAAD, GTZ, SAREC, UNESCO, ODA,
UNDP, Fulbright, SDC, UNU and many others.

The fully trained members of staff then join the core of academic staff, and thus continue the process of training others, with the bulk of trained graduates serving the country in various sectors of the economy.

In the process of training, curriculum are drawn and regularly reviewed to reflect the present needs of the industry and other sectors of the economy that they are serving. In practice, curriculum development should be carried out in collaboration with the personnel in the field as these are better placed to identify the practical needs and requirements of the training programmes. It is presently not known whether it has been the practice among Faculties to involve those in the field in curriculum development.

Furthermore, regular review and evaluation of graduate performances under changing needs and requirements of the economy is a necessity. This, therefore necessitates carrying out tracer studies. To date, very few such studies have been conducted by the individual Faculties at the University of Dar es Salaam. One of the purposes of the present study therefore is to carry out such a survey. In our case, it will be limited to selected Departments that are linked to the Dutch
Government sponsored projects with the University of Dar es Salaam. In the subsequent sections of this report, we shall give the objectives of the study as spelt out under the Terms of Reference, the methods used to carry out the study, review of other tracer studies that have been carried out among the cooperating Departments, so far the discussion of the findings of the present study, future Government and University directions, and the conclusions and recommendations made from the study.

2. OBJECTIVES OF THE STUDY

The main objectives of the study are:

(a) to indicate and review the various tracer related studies taken place for the selected programmes;

(b) to obtain feedback on the appropriateness of selected programmes of study as training for the different kinds of employment actually followed by the graduates;

(c) to specify the Government and University directions in the future in relation to the selected programmes.
The selected programmes in the above study shall include areas in Organic Chemistry, Electrical Engineering, Dentistry and Microbiology, in which the Dutch Government is, presently providing financial assistance to the University of Dar es Salaam.

3. METHODOLOGY

In order to meet the first objective of the study, a review of known tracer studies conducted in the country and relevant to this report was carried out. The discussion of this is given in Section 4 of this report.

For the second objective, a general purpose questionnaire was designed and used for the Graduate and the Employer surveys. A random selection of employers was made for each study area. The selection was made on the basis of the high number of University of Dar es Salaam graduates recruited and the area of operation of the employer.

In this study, the selected organisations were all based in Dar es Salaam. In this way, it was possible to reach both the employer and the graduates within the short period available. Separate questionnaires were issued to the graduates and their employers. Appendix
1 and 2 outline the sample questionnaires used and Appendix 3 gives the list of organisations visited.

The third objective of the study was accomplished through a literature study on one hand and by conducting personal interviews with various policy and decision makers in the Government and at the University of Dar es Salaam.

4. REVIEW OF PREVIOUS TRACER STUDIES CONDUCTED

In relation to the four study areas, i.e. Organic Chemistry, Electrical Engineering, Dentistry and Microbiology, there are only two known cases of tracer studies conducted at the University of Dar es Salaam. These were conducted by the Faculty of Engineering.

4.1 Graduate and Employer Survey 1985 of the Faculty of Engineering

This tracer study was a follow-up of a preliminary study which was conducted in 1984 by the same Faculty. The study was conducted in 1985 during the fourth Term, coinciding with the industrial training period. Since the findings of the last study were incorporated in the 1985 study, the discussion below will therefore be bared on the findings of the second study.
The study aimed at assessing all Faculty of Engineering (FoE) graduates and their employers in the country. A total of 751 graduates had passed through the Faculty at the time of the study and out of these, 309 graduates and 136 employers completed the questionnaires. The main objectives of the study were:

(a) to establish placement pattern of FoE graduates;
(b) to establish the relevance of FoE programme of study in relation to the actual needs of the industry;
(c) to check the quality of FoE graduates through employers' feedback;
(d) to establish computer data-base of FoE graduates;
(e) to pin-point possible candidates from industry worth recruiting for teaching at FoE.

Following the analysis of the collected data a number of issues came to light and these formed the basis of discussion and recommendations made by the study team.
4.1.2 The Findings

In the majority of cases, the employers were quite satisfied with the academic quality and performance of Faculty of Engineering graduates. In most cases, FoE graduates compared favourably with graduates trained elsewhere. Among graduate respondents, some indicated satisfaction and relevance of the education received at FoE, while others felt that some of the courses taken at FoE were irrelevant to their present needs.

In a diversified industrial economy such as that prevailing in Tanzania and considering manufacturing and processing nature of the majority of the industry in the country, it is highly likely that academic skills that relate to design and analysis may not be fully utilised in a typical working environment that merely requires maintenance and service skills.

Furthermore, the study team admits lack of adequate coverage of electrical engineers in their study sample.

Since the study addressed all engineering graduates equally, it is hard to make strong conclusions on the impact and implications of the individual disciplines in socio-economic transformation.
4.1.3 **The Recommendations**

Among the recommendations made by the study, the following are worth noting:

(a) the need to create a permanent forum for employers and graduates views;

(b) the need to encourage regular reunions with graduates such as open days etc.;

(c) the need to examine the issue of introducing computer studies into the curriculum and other specialised courses;

(d) the need to devote seriousness to supervision of practical training in industry and to commit employers to provide such training;

(e) the need to involve people from industry in curriculum development;

(f) the need to strengthen the Office for Relations with Industry (ORI) and to revitalise the Committee for Relations with Industry (CORI).
5. DISCUSSIONS OF THE FINDINGS OF PRESENT STUDY

The findings of the present study will be presented according to the given study areas in Organic chemistry, Electrical Engineering, Dentistry and Microbiology.

5.1 Graduate and Employer Survey in Organic Chemistry

During the exercise, the following graduates and employer representatives were visited:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Graduates</th>
<th>Employer Representatives</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tanzania Bureau of Standards</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2. Tanzania Breweries Limited</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3. Government Chemical Lab.</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4. Tropical Pesticides Research Institute (TPRI)</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>10</strong></td>
<td><strong>7</strong></td>
<td><strong>17</strong></td>
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5.1.1 Graduate Survey

The following findings were obtained from the questionnaire (Appendix 1).
5.1.1.1 Usefulness of Studies at UDSM in Relation to Present Employment

Out of ten respondents, five felt that the studies were useful to their present employment, while two felt the studies lacked the practical content necessary for their job assignment and the rest considered the programme to be purely educational.

5.1.1.2 Need to Introduce Changes in the Present Curriculum

Five respondents indicated a strong need for more practical assignments in the curriculum, while two felt the curriculum was adequate and the rest were silent.

5.1.1.3 Need for Additional Training After Graduation

All the respondents received in-service training after their graduation to meet their job requirements.

5.1.1.4 Training Versus Professional Expectations

All the respondents except two felt that their training was proper for their professional needs.

5.1.1.5 Continued Contact with the Department

All respondents maintain contact with the department and the co-operation was very good.
5.1.2 Employers Survey

The following findings were obtained from the questionnaire (Appendix 2):

5.1.2.1 Familiarity with the Training Programme

Five out of seven respondents were familiar with the programmes.

5.1.2.2 Meeting Needs of the Tanzanian Workers Environment

Three respondents thought the training was not adequately tailored for the Tanzanian situation, while the rest felt that it was partly relevant.

5.1.2.3 Comparison with Foreign Graduates

On overall, the graduates from UDSM compared favourably with other graduates from institutions outside Tanzania.

(a) Theoretical Skills

Two out of six respondents rated University of Dar es Salaam graduates in Organic Chemistry as "very good" theoretical skills compared to "faire" rating given to similar graduates trained elsewhere. Three respondents felt that both graduates faired equally well and rated them as "good". One respondent was silent on this issue.
(b) Practical skills

Four out of six respondents rated both University of Dar es Salaam trained graduates and those trained elsewhere as "good". One respondent felt that University of Dar es Salaam graduates had only "fair" practical skills compared to "good" practical skills displayed by similar graduates trained elsewhere. One respondent was silent on this issue.

(c) Adaptability

Three out of six respondents felt that both graduates were equally adaptable and rated them as "good". One respondent rated both graduates as "fair" while one respondent felt that University of Dar es Salaam were more adaptable than similar graduates trained elsewhere and therefore rated them as "good" and "fair" respectively. One respondent was silent on this issue.

(d) Innovativeness

Three out of six respondents felt that both graduates possessed innovative skills and rated them as "good". One respondent felt that
graduates trained elsewhere were more innovative compared to their University of Dar es Salaam counterparts and therefore rated them as "good" and "fair" respectively. One respondent rated both graduates as "fair" while one respondent was silent on this issue.

(e) Flexibility

Four out of six respondents rated both graduates as "good". Two respondents has no basis for comparison but one felt that University of Dar es Salaam graduates were fairly flexible and rated them "good".

5.1.2.4 Further Training

Most respondents provided additional inservice training and in some cases specialist training overseas.

5.1.2.5 Involvement in Curriculum Development

None of the respondents has been involved in the Curriculum development at UDSM.

5.1.2.6 Professional Relationship with the Department

All the respondents maintained professional relationships with the department through seeking
professional advice, training members for technical expertise, and use of laboratory facilities.

5.1.2.7 Graduate Performance at Places of Work

Four out of the seven respondents were satisfied with the performance of the graduates, and the rest felt they lacked practical skills.

5.2 Graduate and Employer Survey in Electrical Engineering

During the exercise, the following graduates and employer representatives were visited:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Graduates</th>
<th>Employer Representatives</th>
<th>Total</th>
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<td>1. Tanzania Electric Supply Co. Ltd</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>2. British Petroleum</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3. Tazama Pipelines Ltd</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>4. Aluminium Africa Ltd</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5. Light Source Ltd</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>6. National Cash Registers (NCR)</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. Tanzania Bureau of Standards (TBS)</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>8. KIUTA Ltd (Publishers)</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>17</strong></td>
<td><strong>6</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>
5.2.1 Graduate Survey

The following findings were obtained from the questionnaire (Appendix 1):

5.2.1.1 Usefulness of Studies at UDSM in Relation to Present Employment

All seventeen respondents felt that the studies undertaken at UDSM have been very useful and help them carry out their day to day duties in their professional undertakings. One respondent however felt that only a small portion of the curriculum was relevant to him.

5.2.1.2. Need to Introduce Changes in Present Curriculum

Eleven respondents strongly felt that there is a need to introduce changes in the present curriculum because of new developments taking place in the field, while five of the respondents felt that the present curriculum is adequate and therefore requires no changes, while one respondent was silent on this question.

5.2.1.3 Need for Additional Training after Graduation

Thirteen of the respondents had in-service training in their respective jobs and felt that such a training was relevant and necessary in
familiarising themselves with various operations in their new jobs. However four of the respondents did not require any further training after graduation.

5.2.1.4 Training Versus Professional Expectations

Ten of the respondents were satisfied with their working environment while six had some missgivings. One respondent was silent on this issue. Among the disatisfactions expressed by the respondent included the misallocation of jobs, whereby respondents were involved in more technician work rather than using their learned skills in design work. Others were merely performing supervisory functions of maintenance works.

5.2.1.5 Continued Contact with the Department

Nine out of seventeen respondents maintain contact with their former Department through advisory services and consultancy work. Other contacts have been established through participation in Technical Committees. The remaining respondents did not have contact with the Department mainly due to lack of opportunity. However, those who kept their contact with the Department found a good cooperation with members of staff.
5.2.2 **Employer Survey**

5.2.2.1 **Familiarity with the training programme**

Four of the respondents firmly believed that they were familiar with the training programme in Electrical Engineering at the University of Dar es Salaam either by being the by-product of the programme themselves or through reading the Faculty's Prospectus or through their association with the Department in the administration and supervision of practical training in industry, while one respondent had registered total ignorance of the programme, and another was only "some how" aware of the programme.

5.2.2.2 **Meeting Needs of the Tanzanian Working Environment**

Four out of seventeen respondents believed that the training programme of the Department of Electrical Engineering adequately meets the needs of local industry, but all the same the graduates needed an in-service training in industry. This is mainly to familiarise them with the industrial set-up as opposed to the academic environment at the University. One respondent implied inadequacy of the programme and wished for more practical,
design and management oriented programme at the Department. One respondent was silent on this matter.

5.2.2.3 Comparison with Foreign Graduates

The majority of the respondents had the opinion that the Electrical Engineering graduates at the University of Dar es Salaam compared themselves favourably with electrical engineering graduates trained elsewhere.

(a) Theoretical Skills

Five out of seventeen respondents rated as "very good" both locally trained electrical engineering graduates and those trained elsewhere. One respondent felt that electrical engineers trained elsewhere displayed "excellent" theoretical skills, while another rated both graduates with "good".

(b) Practical Skills

All seventeen respondents rated the practical skills of electrical engineering graduates from the University of Dar es Salaam as "good". In contrast, four of the respondents rated practical skills of graduates trained elsewhere as "very
good", one respondent rated them as "excellent" and another rated them as "poor".

(c) Adaptability

All seventeen respondents felt that both electrical engineering graduates from the University of Dar es Salaam and those trained elsewhere were highly adaptable to the local environment with rating ranging from "good" to "very good".

(d) Innovativeness

Both graduates categories were rated as innovative with scores ranging from "fair" to "very good".

(e) Flexibility

Both graduates categories were considered flexible with ratings ranging between "fair" to "very good" and the majority of them being in the "good" category range.

5.2.2.4 Further training

All seventeen respondents saw the necessity for further training. Some deliberately sent their employees to refresher courses and continuing development programme.
5.2.2.5  Involvement in Curriculum Development

None of the respondents has been involved in curriculum development exercises at the University of Dar es Salaam.

5.2.2.6  Professional Relationship with the Department

Two out of six respondents maintain contact with the Department of Electrical Engineering mainly through consultancy and services activities rendered by the Department. The remaining four respondents had no link of any kind with the Department.

5.2.2.7  Graduate Performance at Places of Work

Five out of six respondents were quite happy with the performance of Electrical Engineering graduates from the University of Dar es Salaam. In one case, an extra training was necessary to bring the graduate to the level of expectation of the employer. One respondent however felt that the graduates lacked skills in technical report writing and management skills.
Graduate and Employer Survey in Dentistry

During the exercise, the following graduates and employer representatives were visited.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Graduates</th>
<th>Employer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Muhimbili Medical Centre</td>
<td>11</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>2. Ocean Road Regional Hospital (National Coordinator)</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>11</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

The principal employer for the dentist cadre is the Ministry of Health, which allocates the graduates to various regional and district hospitals. In this context, the role of the national coordinator or head of the National dental services includes the allocation and assessment of the graduate dentists. Taking this into account, the overall thrust has been to seek the consolidated view of the national coordinator.

Graduate Survey

The following findings were obtained from the questionnaire (Appendix 1):
5.3.1.1 Usefulness of Studies at UDSM in Relation to Present Employment

All eleven respondents felt that the studies in Dentistry taken at the University of Dar es Salaam have been useful and relevant to their employment. However, two of the respondents showed concern over the lack of proper materials and equipment which create a gap between knowledge and the actual working environment.

5.3.1.2 Need to Introduce Changes in the Present Curriculum

Nine out of eleven respondents wanted to see changes in the present programme in Dentistry while the remaining two thought that the present programme adequately covers the preventive aspects and therefore need not be changed. Among the reasons advanced for the proposed changes include scrapping out some irrelevant courses such as family care study, and to provide less undertone to preventive side of the training and therefore more weight be put on the clinical aspects. Furthermore, more general approach was proposed in subjects such as anatomy. Other respondents felt that the whole programme should be retuned to give more time to students to concentrate on the practical aspects of the course.
5.3.1.3. Need for Additional Training After Graduation

Seven out of eleven respondents required additional training to cope with their present work and the changing working environment. The remaining four respondents felt that the knowledge gained at the University was quite adequate for their job requirement.

5.3.1.4 Training Versus Professional Expectations

Five out of eleven respondents felt that their employment adequately met their expectations, although one expressed some doubts as to whether similar conditions will prevail if one is to serve in the regions. The remaining six respondents showed some disatisfactions especially due to lack of drugs, working tools and shortages of dental materials.

5.3.1.5 Continued Contact with the Department

Without an exception, all eleven respondents maintained contact with the Division of Dentistry after graduation. Some were employed as academic members of staff and some consulted with Senior Doctors on difficult cases. In all of the above cases the Division cooperated with former graduates and was keen and eager to help.
5.3.2 **Employer Survey**

The following findings were obtained from the questionnaire (Appendix 2):

5.3.2.1 **Familiarity with the Training Programme**

The respondent has participated in the establishment of the School of Dentistry at the University of Dar es Salaam and therefore was familiar with the teaching programme at the school.

5.3.2.2 **Meeting Needs of the Tanzanian Working Environment**

The respondent felt that the programme is satisfactory only to a reasonable degree. He felt that there should be more emphasis towards a community approach.

5.3.2.3 **Comparison with Foreign Graduates**

The respondent rated University of Dar es Salaam trained graduates in Dentistry highly compared to those trained elsewhere.

(a) **Theoretical skills**

The University of Dar es Salaam trained graduates were rated as "very good" while those trained elsewhere as "fair".

26
(b) **Practical skills**

The University of Dar es Salaam trained dentists were rated as having "good" practical skills, while those trained elsewhere as "poor".

(c) **Adaptability**

The University of Dar es Salaam trained graduates in Dentistry were thought to be more adaptable to the local situation compared to those trained elsewhere. The rating of the two were "good" and "fair" respectively.

(d) **Innovativeness**

The University of Dar es Salaam graduates in Dentistry were thought to be more innovative compared to those trained elsewhere.

(e) **Flexibility**

The University of Dar es Salaam trained graduates in Dentistry were thought to be more flexible compared to those trained elsewhere. The respondent rated them as "good" and "fair" respectively.
Further Training

The respondent encourages graduates to undertake further training, but only after they have served for at least two years in the field. This was felt, will help them to benefit from such a training.

Involvement in Curriculum Development

The respondent has been involved in curriculum development in Dentistry.

Professional Relationship in the Department

The respondent maintains regular contact with the Division of Dentistry through clinical consultancy and teaching.

Graduate Performance at Places of Work

The respondent is of the opinion that the Dentistry graduates at the University of Dar es Salaam perform to the expectation of their employers. However, the respondent questioned their competence and first hand practical experience in clinical work and oral health
problems in the districts and the regions, considering that the majority of dental patients live in those areas.

5.4 Assessment and Evaluation of Microbiology

5.4.1 Background

The Microbiology postgraduate programme commenced in the 1988/89 Academic year. As such no M.Sc. degree graduates have gone through the programme yet and hence no employers exist who can comment on the appropriateness of the Microbiology training.

5.4.2 Institutions Survey

However the study team met some potential employers of the Microbiology graduates. These are Tanzania Breweries Ltd, Tanzania Bureau of Standards, Ministry of Mineral and Energy, Tanzania National Commission of Science and Technology, and the Tanzania Diaries Ltd. and posed questions to them to find out:

1. if they were aware of the Microbiology programme at the University of Dar es Salaam;
2. if they consider the programme potentially useful to National development;

3. if they have been approached to contribute in curriculum design of the course;

4. how they foresee the demand for the future graduates of the programme.

5.4.3 Institutions Responses

All institutions surveyed were unaware of the existence of the programme nor were they consulted in curriculum design works to seek their views on specific areas of emphasis. Nevertheless, a majority of the institutions considered the programme as relevant, useful and timely, taking into account the present development in the field, and were therefore convinced that there was a national demand for trained personnel in this field.
6. FUTURE GOVERNMENT AND UNIVERSITY DIRECTIONS

It is apparent from the foregoing that the University of Dar es Salaam has to co-exist with its environment which demands applied skills and techniques in its functions. In accordance with the varying demands and realities portrayed by Government, public and private institutions, the following developments are presently in the feasibility stages at the University and the Government levels, in response to the emerging issues.

6.1 University Response

6.1.1. Joint Curriculum Development Committees

The Faculty of Engineering is presently setting-up a Curriculum Development Committee, which will incorporate selected representatives from Government and Industry. This is expected to go a long way towards enhancing relations with industry which have not picked-up as expected, and will in the process enable the Faculty to service its curriculum to meet the new technological and specialist requirements of the industry.

The Faculty of Engineering is anticipating to hold an indepth secondary tracer study in 1989/90.
6.1.2 Research and Fellowship Programmes

An effort has been mounted to develop a framework that will create a scholarship fund with contributions from various national organs, to provide scholarships for students in postgraduate programmes with an applied research/consultancy project attached, in response to specific needs displayed by various clients. In this manner, it is anticipated that research will be given higher priority by the Government, through a large allocation of funds for research and subsequently enable the University academics to attend to practical studies for the benefit of the nation.

6.2 Government Response

6.2.1 Manpower Allocation

Graduates of the University of Dar es Salaam have been allocated employment upon graduation, by the Ministry of Health (Medical/Dentistry graduates), Ministry of Education (Education based graduates) and Ministry of Manpower Development (all other graduates). In this manner, employers have only been requisitioning for quantity of graduates rather than being given an opportunity to screen for quality. The Government is now developing a mechanism whereby employers would be interviewing
prospective graduates and selecting them on merit. This development has yet to be approved by the Cabinet of Ministers and may not be ready for implementation up till the 1990/91 financial year. However, it is generally felt that while employers will not be 'dumped' with physical numbers, it will also enable the graduates to be more serious in their period of study, so as to be more marketable. The prospects of automatic employment will not be applicable.

6.2.2 Study Sponsorship and Scholarship

Candidates who have been admitted into the University of Dar es Salaam at the Undergraduate level have been automatically sponsored by the relevant Ministries. It has now been decided by the Government that financial sponsorship will only be given to candidates admitted into 'rare disciplines'. A 'rare discipline' has not been clearly defined, but one would expect to include Agriculture, Medicine, Engineering and the Basic Sciences.

The implication of this directive is that candidates would apply mostly for the priority areas, and thereby creating a specific cadre of
experts and in turn satisfying the national demand. There is expected to be a special arrangement of 'bank loans' for candidates admitted into the non-priority areas.

The implementation of this scheme is not foreseen before the 1990/91 year of activity, as the matter is still under study and has yet to be approved by the Cabinet of Ministers.
BIBLIOGRAPHY

1. Graduate Survey 1984, Faculty of Engineering, University of Dar es Salaam, Tanzania.

2. Graduate and Employer Survey 1985, Faculty of Engineering University of Dar es Salaam, Tanzania.


GRADUATE SURVEY

1. Personal Data

1.1 Name: ..............................................................

1.2 Year of Graduation from UDSM: ............................

2. Employment Data

2.1 Present Employer: ..............................................

2.2 Previous Employers
Since graduation: ................................................

2.3 Reasons for leaving previous employment: ..............

3. Assessment of Academic training and Job allocation

3.1 Have your studies at the University of Dar es Salaam been useful in your present employment? Yes/No ... Why?
...................................................................................
...................................................................................
...................................................................................

3.2 Should changes be made in the University of Dar es Salaam curriculum? Yes/No ...... Why?
...................................................................................
...................................................................................
...................................................................................
3.3 Did you require additional training after graduation to meet your job requirements? Yes/No ..... Why?
..........................................................................................................................
..........................................................................................................................

3.4 Does your employment meet your professional expectations? Yes/No ... Why?
..........................................................................................................................
..........................................................................................................................

4. Professional relations

4.1 Do you maintain contact with your department at the University of Dar es Salaam? Yes/No ..... Why?
..........................................................................................................................
..........................................................................................................................

4.2 Do you find cooperation with your department at the University of Dar es Salaam? Yes/No ... Why?
..........................................................................................................................
..........................................................................................................................
EMPLOYER SURVEY

1. Organisation

1.1 Name: .................................................................

1.2 Address: ............................................................... 

1.3 Contact/Person/Designation: ......................................

1.4 Nature of Business: ..................................................

2. Graduate Assessment

2.1 Are you familiar with the training programme at the University of Dar es Salaam? Yes/No ... Why? (Please elaborate).

.................................................................................................................. 

..................................................................................................................

2.2 If Yes, does it meet the needs of the Tanzanian working environment? Yes/No (Please elaborate).

..................................................................................................................

..................................................................................................................

2.3 Kindly comment on the following:

<table>
<thead>
<tr>
<th></th>
<th>Theoretical skills</th>
<th>Practical skills</th>
<th>Adaptability</th>
<th>Innovativeness</th>
<th>Flexibility</th>
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<td>Graduates from UDSM</td>
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<td></td>
</tr>
<tr>
<td>Graduates from else where</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Scale: 
- Excellent - 5
- Very Good - 4
- Good - 3
- Fair - 2
- Poor - 1

2.4 Do you provide/encourage the graduates to undertake further training? Yes/No. (Please elaborate).

3. Professional links
3.1 Have you been involved in Curriculum Development at the University of Dar es Salaam? Yes/No.
(Please elaborate)

3.2 Do you have professional relationships with the University of Dar es Salaam? Yes/No.
(Please elaborate).

3.3 Are the University of Dar es Salaam graduates in your institutions performing to your expectations? Yes/No.
(Please elaborate).
### INSTITUTIONS VISITED

<table>
<thead>
<tr>
<th>Organisation/Institution</th>
<th>Organic Chemistry</th>
<th>Electrical Engineering</th>
<th>Dentistry</th>
<th>Microbiology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G</td>
<td>E</td>
<td>G</td>
<td>E</td>
</tr>
<tr>
<td>1. Tanzania Bureau of Standards</td>
<td>2 2 4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. Tanzania Breweries Ltd</td>
<td>5 2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Government Chemicals Laboratories</td>
<td>2 3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4. Tropical Pesticides Research Institute (TPRI)</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>5. Tanzania National Commission for Science &amp; Technology</td>
<td>- 4</td>
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<td>6. Ministry of Energy &amp; Minerals</td>
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<tr>
<td>7. Tanzania Dairies Ltd</td>
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<tr>
<td>8. Tanzania Electric Supply Co. Ltd</td>
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<tr>
<td>9. British Petroleum</td>
<td>-</td>
<td>- 1 1</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
10. Tazama Pipelines - - 3 1 - - - -

11. Aluminium Africa Ltd - - 4 1 - - - -

12. Light Source Ltd - - 3 1 - - - -

13. National Cash Registers (NCR) - - 1 1 - - - -

14. KIUTA Publishers - - - 1 - - - -

15. Muhimbili Medical Centre - - - - 11 - - -

16. Ocean Road Hospital - - - - - 1 - -

| Total | 10 7 17 6 11 1 7 |

Key:  
G = Graduates  
E = Employer Representative

-----------------------------
APPENDIX V

PROGRAMME EXTERNAL EVALUATION MISSION

In the Netherlands:

NUFFIC
21 October Dhr. Oebele Bruinsma

CUN
26 September Dhr. A. Scholten, secretaris begeleidingscommissie
Drs. J.G.J.M. Wennink, hoofd Bureau Buitenland
Dr. W.M.V. Dolmans, projectverantwoordelijke medicijnen
Drs. H. van Asten, ex-langverbander in het project
Dr. F.H.M. Mikx, projectverantwoordelijke tandheelkunde
Prof. Dr. K. Koning
Prof. Dr. B.M.F. van Iersel, voorzitter begeleidingscommissie Tanzania
Prof. Dr. Ir. G.D. Vogels, projectverantwoordelijke microbiologie
Prof. Dr. B. Zwanenburg, projectverantwoordelijke organische chemie
Prof. Vogels
Ing. J. van Bommel, projectverantwoordelijke centrale werkplaats

TUE
27 September Dhr. J. van Cranenbroek, Bureau Buitenland
Dr. Ir. W.F.H. Merck

GMDC
27 September Drs. G. Akse

In Tanzania:

22 October Departure from Amsterdam
23 October Arrival in Dar Es Salaam
Introduction Meeting with:
Mr. B.K.C. Bali; Head of Cooperations, Links and Projects Section
Dr. A.K. Semesi; Coordinator Microbiology Project
Dr. H. Gijzen; NUFFIC Science Coordinator

24 October Public Holiday
Study of documentation provided on arrival
Meeting with Mr. B.K.C. Bali.

25 October Meeting with Prof. K.E. Mshigeni; Director Post Graduate Studies
and presentation of Briefing Document.
Meeting with Mrs. Hanny Zaal; Royal Netherlands Embassy
Meeting with Mr. D.K. Tungarazaj; Director DUP and visit to the University Press and meeting with his staff.
Meeting with Mr. Th. Andringa; GMDC advisor
Meeting with Mr. B.K.C. Bali

1
26 October

Meeting at the Central Science Workshop with
Mr. M.K. Neus
Mr. Trouw
Mr. Mhamiwala
Mr. Mwangono; acting/manager Mechanical section and
Dr. H. Gijzen

Meeting at the Microbiology project with
Prof. J.A. Kapuya; Head of Botany Department
Dr. J.G. Yarro; Head of Zoology Department
Dr. A.K. Semesi; Coordinator Microbiology Project

Meeting with the Organic Chemistry Project with
Mr. S. Kagaruki; Head of Chemistry Department
Mr. M.H. Nkunya; Project Coordinator
Mr. M. Kishimba; Lecturer and
Prof. M.R. Khan

Meeting with the Zoology Project with
Dr. J.G. Yarro; Head of Zoology Department
Professor J.R. Mainoya
Mr. H.B. Pratap; Lecturer and
Mrs. F.N. Urasa; Lecturer

Meeting at Physics department with Dr. E.M. Lushiku.

27 October

Meeting with the Vice Chancellor Prof. G.R. Mmari and
Chief Academic Officer P.M. Msuya

Meeting with Mrs. Hanny Zaal; Royal Netherlands Embassy

Meeting with the NUFFIC experts attached to the
Netherlands supported projects
Mr. H. Gijzen
Mr. M.K. Neus
Mr. Trouw
Mr. v.d. Bruggen and
Mr. Th. Andringa

28 October

Meeting with Mr. Van Reenen, NUFFIC Coordinator Dentistry

Meeting with Director General of Muhimbili Medical Centre
Dr. P.M. Sarungi

Meeting with the Dean of the Faculty of Medicine
Prof G.M.P. Mwaluko
the Project Coordinator and
Dr. Van Reenen

Meeting at the Electrical Engineering Project with
Dr. H.R. Mgombelo, Head of Department
29 October

Meeting at the Faculty of Commerce and Management with Dean of Faculty, Dr. F.M. Mboya

Meeting with Mr. B.K.C. Bali

Meeting with the Netherlands NUFFIC experts.

30 October

Formulation of Debriefing Notes.

31 October

Meeting with Mr. J.L. Mpuya, Acting-Bursar
Mr. I.M.M. Mndeme, Deputy Bursar
Mr. S.N. Songo, Senior Accountant

Meeting at the Faculty of Science with
Dr. M.G. Bilal, Dean of Faculty;
Prof. A.K. Semesi, Microbiology;
Dr. B.A. Manja, Head of Mathematics Department;
Dr. S. Kapilima, Head of Geology Department;
Dr. H. Gijzen, Microbiology;
Prof. J.A. Kapuya, Acting Head of Botany Department;
Prof. D. Mwandemele, Associate Dean;
Mrs. M.K. Ishumi, Faculty Administrator;
Dr. M.H. Nkunya, Head of Organic Chemistry;
Mr. H.B. Pratap, Zoology;
Dr. J.G. Yarro, Head of Zoology Department;
Dr. E.M. Lushiku, Head of Physics Department;
Mr. Trouw, Central Science Workshop and
Mr. M.K. Neus, Central Science Workshop.

1 November

Meeting at the Ministry of Education with
Mr. D.M. Kusenha, Assistant to the Principal Secretary Ministry of Education and
Mr. Ndonde, Head of Department for Higher Education.

Meeting at the Tanzania Commission for Science and Technology with
Prof. A.S. Msangi, Director;
Dr. Bitanyi, Principal Scientific Officer I
Mr. Asman, Principal Scientific Officer II and
Mr. Munisi, Principal Scientific Officer II

Meeting at the Ministry of Health, Dentistry Division with
Dr. R.J. Muya, Chief Dental Officer.

Meeting with Dr. R. Visser, Field Director SNV
Formulation of Debriefing Notes and printing

Presentation of the Briefing Notes to the Vice Chancellor and the Central Steering Committee.

In attendance:
Vice Chancellor,
Chief Academic Education.

Meeting with Mr. B.K.C. Bali on the Graduate and Employer Survey.

Reception with Mr. M.Th. Vogelaar, First Embassy Secretary

Departure for the Netherlands
(Mr. M. van der Linde)

4 November

Departure for Nairobi and the Netherlands
(Mr. A. Hordijk)

10 November

Meeting at NUFFIC with Mr. Oebele Bruinsma

18 November

Meeting at the University in Nijmegen with the Centrale Begeleidingscommissie and project coordinators.
PROPOSED PLAN FOR NEW PROJECTS TO BE SPONSORED
by NUFFIC/DGIS

RESEARCH AND CONSULTANCY PROJECTS

UPGRADING OF RESEARCH AND CONSULTANCY ACTIVITIES
AT THE UNIVERSITY OF DAR ES SALAAM

OCTOBER, 1988

HG/MICRO/24
RESEARCH AND CONSULTANCY PROJECTS

UPGRADING OF RESEARCH AND CONSULTANCY ACTIVITIES
AT THE UNIVERSITY OF DAR ES SALAAM

<table>
<thead>
<tr>
<th>CONTENTS</th>
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<tbody>
<tr>
<td>I.   Introduction</td>
<td>3</td>
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<tr>
<td>II.  Research and consultancies</td>
<td>3</td>
</tr>
<tr>
<td>III. Proposed Activities</td>
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<td>IV.  financial contribution to be obtained</td>
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I. INTRODUCTION

The University of Dar es Salaam and the Sokoine University of Agriculture are the key institutions for training of high level manpower in Tanzania. Besides provision of academic manpower, the University of Dar es Salaam (UDSM) has major tasks in transmitting knowledge to relevant industries, institutions and ministries (consultancies) and to advance the frontiers of knowledge (research). These tasks are basically identical to the tasks of any other academic institution elsewhere.

With major tasks in education, research and consultancy services, the UDSM has a great potential role in the development process of the country. At present however, the implementation of these tasks is hindered by the relatively isolated position of the UDSM especially with respect to contacts with industries. Moreover the present financial situation of the university causes restrictions on the research activities undertaken by the individual departments.

This project proposal discusses possibilities to upgrade research and consultancy activities at the departmental level at the UDSM. Strengthening of the research and consultancy capacity would substantially improve the image of individual departments and also of the university as a whole. Moreover, an increase in the consultancy services, being money generating activities, would make departments more independent (partially self-sufficient) from financing through normal university channels. This situation is very common in many universities in developed countries, where financial inputs from the government cover only part of the total university budget.

II. RESEARCH AND CONSULTANCIES

At present, research activities in many departments are undertaken to a limited extent only, mainly because of lack of funds. Lack of means (i.e. chemicals, laboratory equipment) and the low number of M.Sc. students (by thesis). The provision of consultancy services by departments is mainly restricted because of a lack of modern laboratory facilities and the unawareness by many industries of the potentials of the university. Research and consultancy capacity of the university needs to be strengthened and to be more application and problem oriented in order to improve the contribution of the UDSM to the development process in Tanzania. Especially the industrial and the agricultural sector could benefit from research activities and consultancy services of the UDSM.
In order to be able to provide good consultancy services to industries, parastatal organizations and to ministries, departments should be better equipped and technical members of staff should be trained in routine consultancy analysis. Consultancy services may consist of provision of information, performing analyses or conducting small research projects which may help to solve problems or may result into new applications.

To give an example of possible consultancy topics, some of the consultancy services offered in by the Microbiology Laboratory, Department of Botany, are listed below:

<table>
<thead>
<tr>
<th>CONSULTANCY FOR</th>
<th>SUBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howard Humphreys Ltd. (World Bank project)</td>
<td>Analyses on performance of oxidation ponds.</td>
</tr>
<tr>
<td>Haskoning b.v. (World Bank project)</td>
<td>Analyses on water quality in Dar es Salaam.</td>
</tr>
<tr>
<td>Tanzania Breweries</td>
<td>Microbiological tests on disinfectant bethane.</td>
</tr>
<tr>
<td>Makutupora Winery Research Station</td>
<td>Analysis on Microbial growth in wine</td>
</tr>
<tr>
<td>DOWICO (to be started yet)</td>
<td>1. Analyses on acids in wine.</td>
</tr>
<tr>
<td></td>
<td>2. Microbial contaminations in wine.</td>
</tr>
<tr>
<td>Tanzania Bureau of Standards</td>
<td>Provide information to the Microbiological specification for food technical committee.</td>
</tr>
</tbody>
</table>

These kind of consultancy services will provide a good basis for fruitful contacts and cooperation with industries and institutions.

The short term aim of these consultancies is to generate money which can subsequently be used to buy locally available goods (chemicals, gasses, stationary), to sponsor M.Sc. students who will undertake research activities and to serve as an incentive to members of staff. In this way the research activities of departments will be stimulated. The research and consultancy capacity of departments will improve substantially by a high number of M.Sc. (by Thesis) students.
In future the consultancy activities should provide a basis for departments to be partially self-supporting and to be largely independent of foreign aid.

III. PROPOSED ACTIVITIES

The first aim of a Research and Consultancy project should be to increase the consultancy services offered by the department, therefore laboratory facilities should be upgraded and special consultancy areas should be identified. Moreover, academic members of staff will visit industries and institutions to inform them about the activities in their department, to investigate problems of industries and to offer consultancy services in relevant fields. The consultancies will be performed mainly by trained technicians, under supervision of an academic member of staff. All academic members of staff should be motivated to attract consultancies, but all consultancy services in a department should be coordinated by one academic member of staff only (preferably by the Head of Department).

As indicated under II, part of the money which will be generated through consultancy services can be used to stimulate research activities in the department. this can be realized by sponsoring of students who will do their M.Sc. by thesis and by ordering consumables, like chemicals and stationary, which are needed in the research. If consultancy activities increase to an extend where manpower becomes a limiting factor, part of the earnings from consultancies can be used to employ extra technicians.

After graduation, the M.Sc. students who were sponsored by departments could be employed by the same department, or, if there is no vacancy within the University, by Industries, Research Institutions or Ministries.

The results from consultancy and research activities can be applied which will result in the introduction of new industrial and agricultural technologies, whereas existing ones can be improved. On the long term this will improve the economy of the country and the wellbeing of the Tanzanian people.

Figure 1 gives a schematic representation of the interaction between the University of Dar es Salaam and relevant industries, institutions and ministries, the effect of consultancy and research activities is indicated.

The proposed Research and Consultancy projects could be initiated in many departments at the University of Dar es Salaam, especially those in the Faculty of Engineering, the Faculty of Commerce and Management and the Faculty of Science. In order to execute such projects, funds (NUFFIC/DGIS) are required to enable departments to order relevant equipment, literature and chemicals and to train technicians on special consultancy techniques.

Some departments which already received support via the PUO programme or other donor programmes are already well equipped.
FIGURE 1

INTERACTION BETWEEN THE UDSM AND RELEVANT INDUSTRIES, INSTITUTIONS AND MINISTRIES

IMPROVED OUTPUT

INDUSTRIES

INSTITUTIONS

MINISTRIES

BSC, BA
MSC, MA
(COURSE WORK)

Employment

Training

consultancies

Profit

profit

CHEMICALS

STATIONARY

MSC BY THESIS

RESEARCH

employment

feedback

application
IV. FINANCIAL CONTRIBUTIONS TO BE OBTAINED

a) University of Dar es Salaam:

The University of Dar es Salaam will pay a salary to a long-term Dutch expatriate member of staff who will be attached to the project. The expatriate member of staff will initiate new consultancy and research activities in the department where the project is taking place. This will be done in collaboration with Tanzanian academic members of staff. The expatriate member of staff will also be involved in teaching within the department. This is to enable Tanzanian members of staff to have more time available to perform research and consultancy services.

b) NUFFIC (PUO funds):

NUFFIC will be requested to provide funds to enable the department where the project is taking place to upgrade its laboratory facilities. Therefore relevant laboratory equipment, literature and chemicals which are needed in research and consultancy activities will have to be ordered. Moreover, NUFFIC will be asked to provide funds for training in the Netherlands of three technicians from the department where the project is taking place. The budget should also include short term visits (2 weeks) and costs for local travel (in Tanzania). Funds for sponsorship of M.Sc. students are required only in the first phase (3 years) of the project.

c) DGIS:

DGIS will be asked to provide a topping-up of the salaries of a long-term Dutch expatriate member of staff who will be attached to the project.
Mr. Ad Hordyk
Matrix Consultants in Development Management
Korte Jansstraat 7, 3512 GM Utrecht,
HOLLAND

Mr. Martin van der Linde
Institut Neerlandais de Recherches Economiques
Division de l'Agriculture et du Developpement Rural
Burgemeester Oudlaan 50, 3062 PA Rotterdam
B.P. 4175, NL 3006 AD Rotterdam.

Dear Sirs,

Re: POSTGRADUATE SCHOLARSHIP FUND

First and foremost, let me take this opportunity to congratulate both of you on your appointment as members of the external evaluation team on the existing co-operation linkage between the University of Dar es Salaam and the Universities of Nijmegen and Eindhoven. I believe this opportunity has enabled you to come to a better understanding about the strengths, the weaknesses, the problems, the successes, and the prospects of our University, and the role the University plays towards the cultural, technological, and socio-economic development of Tanzania.

You will have noted that our University plays a significant role in developing Tanzania's high level manpower, both at Bachelor's degree level and at postgraduate levels. Postgraduate training particularly deserves special mention because of two reasons; first it is at postgraduate level that our University students are thoroughly grounded in research methods, are required to undertake research in a chosen field of study, and to acquire the experience and know-how of reporting the results of scholarly research in the form of a thesis, or a publication in an international journal; and secondly, there are problems in the country with respect to scholarship support for postgraduate education.

In an attempt to promote postgraduate education at the University of Dar es Salaam, and in Tanzania as a whole, I have drafted the enclosed document, which is yet to be discussed and approved as an official University document, to be used in our fund raising campaign for the postgraduate student scholarship fund referred to above.

If you could support the idea in your recommendations to the Dutch Government, that would be a most welcome development. The NUFFIC could, for example, look into the possibility of providing 5 postgraduate scholarships at the University of Dar es Salaam for our M.Sc. programme in Microbiology, 5 in-country scholarships for our M.Sc. programme in Applied Zoology, and an additional 5 scholarships for our M.Sc. programme in Tropical
Disease Control. The NUFFIC could also consider granting another
15 in-country postgraduate scholarships for other disciplines in
which postgraduate scholarship support has been problematic.
This amounts to an equivalent of U.S. $100,000. To this could be
added another $100,000 for equipment, library and laboratory support,
making the total request U.S. $200,000.00. Various other international
funding agencies would also be requested to give financial support
in other disciplines.

I request you to advise whether you consider this to be a
viable project that we could write up in a more comprehensive manner
for possible funding by the NUFFIC. If you could support the idea,
at least in part, and include it in your recommendations, that would
be a significant contribution towards the achievement of self-
sufficiency in Tanzania's high level manpower personnel.

With my best wishes,

Yours sincerely,

Keto E. Mshigeni
PROFESSOR OF BOTANY
AND
DIRECTOR, POSTGRADUATE STUDIES
To: All Members
Higher Degrees Committee

From: Director,
Postgraduate Studies

Re: POSTGRADUATE SCHOLARSHIP FUND

You will recall that at the last Higher Degrees Committee meeting it was agreed that special efforts be made to implement the idea of establishing a postgraduate scholarship fund. As a follow-up towards the implementation of the idea, I have drafted the enclosed paper which attempts to give a justification for the establishment of the fund.

You are requested to study the paper carefully, and to suggest possible amendments which will help to strengthen it.

It will be most deeply appreciated if your comments could reach me within the next two weeks. This would give me time to incorporate your views into a more comprehensive document before the next Higher Degrees Committee meeting. Kindly comment also on the contents of Appendices I and II, related to the document in question.

In your response, please attach also a list (and full addresses) of individuals and heads of institutes whom you know, and who are likely to be willing to make a contribution to the postgraduate scholarship fund, if approached.

Keto E. Mshigeni
DIRECTOR, POSTGRADUATE STUDIES
I. INTRODUCTION

(1) It is increasingly being realised that postgraduate education is an essential component of formal education which, among other things, broadens and deepens the candidate's theoretical framework in his chosen field of study, and enables him to learn the methods, secure the tools, and acquire the experience of advancing frontiers of knowledge through involvement in scholarly research. Postgraduate education thus plays a significant role towards the production of high-level manpower.

(2) Specialists with postgraduate training experience are needed in governmental, parastatal, and private organisations which, collectively, play an important role in the social, cultural and economic transformation and sustained development of any developing nation.

(3) At the time of Tanzania's political independence, specialists with postgraduate degree qualifications were almost exclusively expatriates. Indeed, when the University of Dar es Salaam was established, initially as a constituent College of the University of London, and subsequently of the University of East Africa, the University lecturers and professors were, with a few exceptions, experts from Europe, North America, and Australia. This was the typical pattern.
when considering the people who occupied key positions in the various research institutes and governmental organisations in the newly independent African nations.

(4) The picture is now different. Through the University's Staff Development Programme, many Tanzanians have now been trained to Master's and Ph.D. degree level, and in some of the older Departments the established posts are now fully manned by Tanzanians. Our two Universities have thus gone quite a long way towards fulfilling our national policy of self reliance in high level manpower personnel.

(5) At the time when the University of Dar es Salaam was heavily relying on expatriate teachers for teaching and research, there was a problem of lack of continuity in the services rendered by the expatriate personnel, because they served on relatively short-term contracts, usually of two years duration (though renewable). With the number of Ph.D. degree holders who are now nationals, and hence on permanent terms of employment, the University is now in a better position than ever before, for mounting viable training programmes at postgraduate level, to cater for Tanzania's high level manpower needs. In point of fact our two national Universities, i.e., the University of Dar es Salaam and Sokoine University of Agriculture, can boast of being amongst the leading Universities in Eastern and Southern Africa with respect to their success towards developing a relatively high proportion of their staff members to Master's and Ph.D. degree levels.
(6) Following the establishment of our national Universities, we have also established many co-operation linkage activities with other Universities overseas, which have helped to improve the research and postgraduate training infrastructures in the collaborating departments, faculties and institutes. Some of the postgraduate programmes (e.g., our M.Sc. programmes in Water Resources Engineering and Tropical Disease Control) are now well known beyond our national borders, and attract postgraduate students from other countries in Africa and beyond.

(8) The popularity of our various postgraduate training programmes is shown by the number of candidates admitted for postgraduate study during the past three years. The number of new students selected for admission during 1985/86, 1986/87 and 1987/88 at the University of Dar es Salaam was 206,242 and 212, respectively. Unfortunately, however, 25% to 40% of the admitted students fail to enrol in their respective fields of specialisation because of lack of scholarship support. Thus in 1985/86, 1986/87, 1987/88, as many as 52, 99 and 59 postgraduate students, respectively, who had been selected for admission, were unable to pursue their studies due to sponsorship problems.

(9) When, in a given year, a large number of academically strong postgraduate candidates fail to pursue the programmes for which they had secured admission due to lack of sponsorship, the outcome is that in the following year many would-be applicants become pessimistic, and decide not to bother about submitting applications for admission. Once the availability of a scholarship is announced, however, the trend is reversed, and
many good candidates apply for admission. This was demonstrated at the University of Dar es Salaam recently, when the University's Faculty of Engineering established a competitive scholarship offer for M.Sc. study, from the Faculty's consultancy earnings.

(19) With respect to the cumulative number of new and continuing postgraduate students enrolled at the University of Dar es Salaam during the past three years, the statistics show that in 1985/86, 1986/87 and 1987/88, there were 416, 431 and 433 postgraduate students, respectively. Although, in terms of the growth rate of the postgraduate student population this appears as a very slow development, the figures are quite impressive considering that there were only 4 postgraduate graduands at the University during the 1970/71 academic year. Considering the number of highly qualified teaching faculty members in some Departments and institutes at the University of Dar es Salaam, considering the University's facilities for teaching, research and capacity for offering consultancy services, and considering corresponding postgraduate student enrollment figures in other Universities in the region with similar faculty establishments, it is noted that the University's current postgraduate student intake is still far below the enrollment capacity, which is well above 600.

II. THE NEED FOR FULLY UTILISING POST-GRADUATE TRAINING CAPACITY AT THE NATIONAL UNIVERSITIES IN TANZANIA

(1) It has been stated above that the University of Dar es Salaam is not utilising her full potential with respect to her postgraduate training capacity, largely due to sponsorship problems.
The same can be said about Sokoine University of Agriculture.

In considering the issue on optimum utilisation of the available capacity, therefore, we must also look into the possibility of establishing a postgraduate training scholarship fund.

(2) In the past, our various African nations used to rely heavily on overseas Universities for the postgraduate education of their staff members. This was possible because at that time there were many international scholarships for overseas study. But over the years the number of scholarships for postgraduate training overseas relative to the number of available candidates has diminished. Additionally, the various overseas Universities have significantly increased University fees payable by out-of-state students. On the average one now has to pay US $10,000 to $20,000 per annum for supporting a single postgraduate student in most Universities in Europe, the U.S.A. and Canada, excluding the cost for the air ticket, which is also very high. Since such fees must be paid in foreign currency, and in view of the recent devaluation of local currencies in most developing countries, postgraduate training overseas is becoming increasingly expensive and unaffordable. Indeed, the amount of money spent on the travel expenses, tuition and living expenses of a single postgraduate student sent for training overseas is adequate for providing scholarship support for five to ten students enrolled for postgraduate training at our national Universities.

(3) In the light of the facts presented above, it is evident that there is a need for our various national institutions to implement the already existing policy that postgraduate students
should be sent for overseas study largely where their respective areas of specialization are not adequately catered for at our national Universities, or where the enrollment capacity in our national Universities has been saturated, or where overseas scholarships from international donor agencies and from other governments with which Tanzania has cultural agreements, still exist. If such a policy were implemented we would, as a nation, be saving a substantial amount of our foreign exchange, which we could use for strengthening our less expensive local postgraduate training programmes.

But lack of scholarship support for postgraduate study at our national Universities is not the only factor behind the relatively low postgraduate student enrollment figures. In some cases the prospective candidates themselves prefer to submit applications for admission to University institutions overseas rather than in the local Universities, simply because of prestige. This is not surprising, however, considering that not too long ago young scholars in the U.S.A. and Canada also used to cross the Atlantic Ocean for postgraduate training in Europe. Now, of course, many Universities in the U.S.A. and Canada are well established, and attract doctoral and post-doctoral students from all over the world, including western Europe. Our national Universities in Africa should also strive to attain excellence, our socio-economic problems notwithstanding.

There is also the issue of the acquisition of material benefits (e.g., a refrigerator, a car, good reference books, an electric cooker, a television set, etc.) acquired by postgraduate students
undertaking their studies overseas, which cannot be afforded by their counterparts who are locally registered, and who receive much smaller stipends in dollar terms. It appears safe to suggest that many more candidates would submit applications for postgraduate study at our national Universities if the terms of sponsorship were made more attractive than they are at present.

(7) Additionally, there is the issue of relatively low priority given to postgraduate training by heads of some of our national institutes who, sometimes, consider postgraduate education as a luxury, and hence turn down applications for scholarship support by their young scholars, even if training funds are available. Because of the apparent lack of a clear policy on the funding of postgraduate education in Tanzania, graduate training in our national Universities is also seen simply as an appendage to the undergraduate programmes. Indeed, with a few exceptions, there is very little financial allocation for postgraduate education in most of our government ministries.

(8) Yet another factor is that of inadequate rewarding of staff members who successfully complete their postgraduate training courses. The fact that one has a Master's or a Ph.D. degree qualification does not necessarily mean that his take home salary and fringe benefits will be higher than that of a technical practitioner who was never grilled in a University institution, or that of a businessman who never went through High School. So why bother with worrying about applying for postgraduate education? Thus some potential candidates do not bother to enrol for postgraduate study simply because they cannot conceive immediate financial gains acquired
through pursuing studies in question. If the various problems outlined above were alleviated, the enrollment figures at our national Universities would, in all probability, come closer to the optimum.

III. STRATEGY FOR ESTABLISHING A POSTGRADUATE TRAINING SCHOLARSHIP FUND

(1) Whereas for undergraduate work all the candidates who are selected for admission to the various degree programmes in our national Universities are guaranteed scholarship support from the government, the situation is different when it comes to studies leading to higher degrees, as will be elaborated below.

(2) First there is the issue planning. In the case of the first degree courses, there are government ceilings as to how many students should be trained to become medical doctors, pharmacists, dentists, lawyers, geologists, engineers, etc., in an attempt to ensure that the number of graduates trained tallies with the specific manpower needs of the country. Whoever is selected to be in that number is guaranteed of a government scholarship (if he/she is Tanzanian) for pursuing the relevant first degree course. There is less planning, and there are fewer ceiling limits in our various postgraduate programmes. Additionally, with a few exceptions, the Ministry of Health being one of the exceptions, our various government ministries do not normally give adequate budgetary provisions for the training of their staff members who apply for postgraduate training.
(3) For nearly five years now it has been felt that there is a need for the establishment of a general scholarship fund to cater for the sponsorship of all the postgraduate students who are selected for postgraduate training in the various fields of specialisation offered by our national Universities. The initial plan was that since all the Government Ministries make an effective use of the specialists who are produced through our Universities' postgraduate training programmes, the ministries themselves could include an element of a postgraduate scholarship fund in their annual budgets. The magnitude of the scholarship fund budgeted for by a given ministry was to be in proportion to the specific training needs of the ministry. Since our two national Universities are parastatal organisations within the Ministry of Education, it was felt that the Ministry of Education was the relevant Ministry to prepare a Cabinet paper on the subject. The paper was to benefit from in-puts from other government ministries, once prepared. Unfortunately, however, there has been a delay in the writing of the Cabinet paper on the issue. This has necessitated discussions on the possibility of achieving the end result by following various other approaches.

(4) When preparing its 1987/88 budget, the University of Dar es Salaam thought of solving the problem, at least in part, through including a postgraduate scholarship fund item in its annual budget. This, indeed was also the approach adopted by some of the Universities in our neighbourhood (e.g., University of Zambia). Sokoine University of Agriculture similarly decided to follow this approach in its 1988/89 annual budget. Although the
University of Dar es Salaam did not secure the postgraduate training support funds it had budgeted for through this approach, this does not imply that the Ministry of Education does not support the idea. Sokoine University of Agriculture, indeed, was allocated T.Sh 1,000,000.00 as a postgraduate scholarship fund during the current academic year. It is being anticipated that the Ministry's good will will be extended to the University of Dar es Salaam also this coming (1989/90) academic year.

(5) It has been pointed out that the current postgraduate student population at the University of Dar es Salaam is approximately 450. If the University fully utilized her enrollment capacity, the figure would be above 600. For budgetary purposes, however, it seems reasonable to be modest and to have 500 postgraduate students as a working figure. This figure embraces continuing and new students. Considering that the needed scholarship support per student per annum is approximately U.S. $3,000.00 according to the proposed fees for 1989/90, which are expected to be approved by the University Council soon, this means that the total postgraduate scholarship fund being sought amounts to US $1,500,000.00 or T.Sh 150 million.

(6) Since the beneficiaries of the successful postgraduate students include Ministries other than the Ministry of Education, many parastatal organisations, private companies, and some international organisations, it is most probable that these institutions would be eager to make appreciable contributions to the much needed postgraduate scholarship fund, if approached.
(7) Individuals who have had historical connections with our national Universities are also likely to find it an honour to be asked to make monetary contributions towards strengthening postgraduate education in our Universities. These include previous and current University Chancellors, Vice-Chancellors, Chairmen of the Councils, Deputy Vice-Chancellors and Registrars, Deans of Faculties, Directors of Institutes, Heads of Departments, the alumni of the Universities, etc.

(8) It is increasingly being realised that charity walks are an effective method of fund raising, if well organised, and if led by sufficiently high-ranking government officials (e.g., the President of the Country, the Prime Minister, etc.). It is thus being suggested that this be used as one of the approaches to be adopted when attempting to secure a postgraduate scholarship fund.

(9) With respect to possible contributions from the various government ministries and parastatal organisations, the Ministry of Health has been cited as one of the ministries which regularly budgets for the postgraduate training of her medical doctors. On the average 40 scholarships for new postgraduate students are budgeted for by the ministry every year, which is very encouraging. Although the various other government ministries also budget for postgraduate training, most of the ministries support a lot fewer students than what has been cited above for our Ministry of Health. It is being suggested that all the Ministries be sensitised, and be convinced to budget for more.
(10) Most of the parastatal organisations in Tanzania recognise the significance of training and, indeed, have a Director of Training, or some other senior officer responsible for coordinating the staff development activities of the institution. The staff training section of the institution presents, in its annual budget, an estimate of the funds that will be needed for staff training at postgraduate level and below. The University of Dar es Salaam, for example, currently has 25 young members of staff undertaking their postgraduate training in our local Master's degree programmes, and 15 staff members enrolled in our local Ph.D. degree programmes, through scholarship funds budgeted for by the University. Approximately 20 additional members of staff are in the process of being registered for postgraduate training. The various other parastatal organisations in the country could follow a similar approach and make adequate budgetary provisions for the postgraduate training of their staff.

(11) On the possibility of securing postgraduate scholarship support from the various international agencies, there is every reason to believe that this is an area worth pursuing with vigour. In point of fact there already are a number of international organisations which are offering in-country postgraduate scholarships, tenable at our national Universities. At the University of Dar es Salaam, for example, in-country postgraduate scholarships offered by DAAD, NORAD, IDRC, CIDA, DANIDA, the Ford Foundation, the Rockefeller Foundation, the NUFFIC, the British Council, UNESCO and UNDP, SIDA, SAREC, etc., have given many young men and women an opportunity to upgrade their training to Master's and Ph.D. degree levels. These and
several other agencies could be approached for continued and additional support.

(12) We have not yet discussed the issue of relevance: relevance of the postgraduate training offered by our national universities towards solving Tanzania's socio-economic problems.

In addition to teaching and offering consultancy services, our national Universities have an important role to play with respect to providing answers to the various problems and bottlenecks prevailing in our country through research. Faculty involvement in research, and publication of the research findings is, therefore, weighted heavily when considering academic staff promotions. Student involvement in research is also considered to be a very important component of postgraduate training. At our national Universities, every postgraduate student must undertake research on a problem pertaining to his field of specialisation, and present his research findings in a scholarly manner, in the form of a thesis or a dissertation. This gives the postgraduate student a useful training experience, which he/she can then apply towards the solution of related problems in his/her place of work later on. If the thesis topic is well selected, the postgraduate student's thesis can actually be a very useful data base document in the country.
(13) Considering that the University of Dar es Salaam could accommodate over 600 postgraduate students, and that each one of them is bound to tackle a research problem and to present his research findings in a well bound thesis in the end, one could look at the postgraduate student population, together with the university professors guiding the students, as a huge reservoir from which the nation could tap ideas that are relevant towards the solution of Tanzania's socio-economic problems. This will be elaborated.

(14) The various government ministries and parastatal organisations could enumerate the key problems that hamper Tanzania's socio-economic development, and address them to our national Universities, with the understanding that the Universities would arrange to have these as Master's and Ph.D. research topics for the students supported by the relevant Ministries. The various research institutes could also bring to the Universities problems which need to be researched upon: the Quelea quelea bird, the desertification problem, the mosquito control problem, etc. The problems would then be researched upon, as the postgraduate students' thesis research topics. When the research is completed and the research findings have been compiled into a thesis, the postgraduate student would be required to produce extra copies of the thesis for presentation to the relevant Ministries and Parastatal organisations, where the research findings are likely to be of immediate application. With this approach, the relevant government Ministries benefitting from the research results
would be expected to provide a lot more scholarship support for postgraduate study than is the case at present. The Tanzania Commission for Science and Technology would, similarly, be expected to provide some support, and to suggest research problems to be tackled by the postgraduate students.

(15) In an attempt to inform the various government ministries and parastatal organisations about the postgraduate training opportunities obtaining at the University of Dar es Salaam, the Directorate of Postgraduate Studies at the University is compiling a brochure which will shed more light to the public on the subject. The Directorate is also compiling the abstracts of higher degree theses and dissertations completed by various postgraduate students in various disciplines (which are available for reference in the East Africana Department of the Central University Library) into a series of publications for easier reference. The publications, when completed and distributed, will forge an even closer link between the University and the Tanzanian community which it serves.

IV. SUMMARY AND RECOMMENDATIONS

(1) In the light of the information summarised above, it is being recommended that:

(i) The Ministry of Education continues with the implementation of the idea on the writing of a cabinet paper on central funding for postgraduate education in the country.
(ii) While the activity in (i) above is in progress, our national universities continue with efforts to solicit for funding support through consulting with the various government ministries, private institutions, international agencies, etc, as discussed above.

(2) With respect to the targets to be set, as to how much of the needed fund could be collected from where, it is being suggested that:

(i) 25% of the fund be budgeted for through the Ministry of Education;

(ii) 30% of the fund be budgeted for through the other government ministries (i.e., each Ministry to contribute a share to this).

(iii) 20% of the fund be solicited for from the various international agencies referred to above;

(iv) 15% of the fund be solicited for from former and current Chancellors, and other senior officers of our national Universities;

(v) 10% of the fund be collected from alumni of the Universities, private companies, various parastatal organisations, and also through Charity Walks.
In order to ensure that the various government ministries and parastatal organisations which provide funding support for postgraduate training at our national Universities adequately benefit from the scholarship funds they grant, it is being recommended that the sponsors bring to the attention of our national Universities research problems and topics, which would then be incorporated in the training programme as thesis research topics assigned to the students.

Keto E. Mshigeni
Director, Postgraduate Studies

30/10/88
Dear Sir:

Re: POSTGRADUATE SCHOLARSHIP FUND

Please refer to your letter dated .........................
(Ref. ..................) on the above-mentioned issue, and its enclosures.

I am pleased to inform you that I have read the letter and supporting documents on the scholarship fund, and I am hereby making a commitment to pay the sum of T.shs.......................
(i.e., Tanzanian Shillings ............................................
in words)
as my contribution to the fund.

Please note the box that I have ticked below:

☐ I am enclosing a cheque payable to the Bursar, University of Dar es Salaam, P.O. Box 35091, Dar es Salaam, as my contribution.

☐ I shall send a cheque to the Bursar, University of Dar es Salaam, before ....................
(date)

Thanking you for having given me an opportunity to make a contribution,

Yours sincerely,

8723