Sida Evaluation 01/27

Sida's Support to NUSESA – Network of Users of Scientific Equipment in Eastern and Southern Africa

Eva Selin Lindgren

Department for Research Cooperation

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1 Summary

1.1 Findings and conclusions

During the evaluation process I have arrived at the following main conclusions:

*In developing the technical level of a country the two most important factors are trained staff and functioning instrumentation. NUSESA aims at developing both these aspects by training staff and by assisting in maintenance and upgrading of scientific instrumentation. The goals set by NUSESA need to be taken very seriously by donor organisations and by ministries and institutions in the developing countries.

*NUSESA is a network in the true sense, with approximately one thousand and five hundred members across African countries at present. The organisational structure is "flat" and democratic. The activities of NUSESA are performed by highly motivated people of different expertise and levels of education.

*At the regional level NUSESA has a good leadership in the office in Harare. The National Representatives in the four countries (Eritrea, Zimbabwe, Tanzania and Mozambique) were highly motivated and concerned about the development of NUSESA.

*At the national level the different NUSESAs are of different stability and strength. The number of members varies between the countries, which is in the nature of a non-governmental driven network. There may be difficulties in keeping up NUSESA activities in countries with very few members.

*The impact and sustainability of the national NUSESAs are heavily dependent on the status of the NUSESA members in the involved organisations. Thus, when heads of departments, institutes, industries and universities are interested and active the degree of success and the impact of NUSESA are larger. For long-term sustainability of NUSESA it is essential that persons with different functions in the society are involved.

*The financial situation of NUSESA has been uneven and sometimes problematic. There is a need for more workshops and training than has been possible to materialize. The increased need is motivated primarily by the fact that a) an increasing part of the population in a country is dependent on the function of technical systems and b) the degree of sophistication of advanced instrumentation in research, education and industries is increasing rapidly.

*NUSESA has adopted an efficient and cost-effective way of increasing the number of trained technicians/scientists/experts as formulated in the "train the trainers" concept.

*The workshops that have taken place at both regional and national level are highly appreciated by the people who have taken part in them, as shown in workshop evaluations and in personal interviews.

*There is a shortage of workshops, due to lack of funding. Most technicians working at the "floor" demanded two workshops per year to keep updated.

*Scientists and technicians in the four countries visited (Eritrea, Mozambique, Tanzania and Zimbabwe) were often frustrated over the lack of attention given to their needs by the manufacturing firms.

* The awareness of the need for maintenance of existing instrumentation and equipment is often very low among donors and university leaders. No or very little money are set aside for maintenance.

*There is a general lack of purchasing policy concerning equipment and instrumentation from the university leaderships. This leads to a situation in which many instruments of the same kind are manufactured by different firms with different designs. Lack of spare parts, maintenance manuals and general backup makes repair sometimes very difficult.

*Obstacles in achieving adequate standard and increased performance of instruments and equipment in the NUSESA countries can be overcome by increasing the information on expertise and competence within the African countries as well as the information on the performances of agents and companies involved in selling instrumentation.

1.2 Recommendations to NUSESA

With the aim to further develop the NUSESA activities and making the network sustainable in the future I recommend the following:

*The regional NUSESA should go ahead with its plans to develop a regional constitution as soon as possible.

*As noted in paragraph 6.3.2 an important part in making NUSESA activities sustainable is in identifying the competence within the network in the fields of teaching and in maintaining scientific instrumentation. Accordingly, NUSESA should:

- Offer assistance as instructors/teachers in short-term courses within the universities, high-schools and research institutions/businesses.
- Offer assistance to the leaders of universities and institutes etc in working out purchasing and maintenance policy within the organisations.
- Build a database, linked to NUSESA Website on the Internet, with information on the competence and technical/scientific profile of individual NUSESA members
- Build a database (linked to NUSESA Website) on existing scientific instrumentation at a certain degree of sophistication, in the NUSESA countries. The regional NUSESA should give high priority to working out criteria for which instrumentation should be included in the database, and which additional information on each instrument that should be given.

Such information will facilitate the exchange of researchers who want to make advanced analyses and/or experiments, but who do not have instrumental facilities at hand in their own organisations.

*NUSESA should initiate a "consumers movement" at the regional level and make a database linked to the Website of recommended firms that fulfil NUSESA criteria for ethical behaviour and adequate service in selling, maintenance and repair of scientific instruments. Thus, criteria will have to be established by the regional NUSESA. At a later stage NUSESA should work actively with selling advertising space on the Website to these manufacturers.

*NUSESA should continue its efforts in allocation of funding for workshops of different characters with respect to choice of topic, degree of sophistication (high-tech, or common instrumentation etc), and develop a policy concerning the proportions between workshops of the different characters. NUSESA should make efforts to explain its policy to different donors and interested parties.

*NUSESA should try to make the organisation less dependent on single dedicated persons and also consider the possible future risk for leadership and management problems. Thus NUSESA should introduce activities (for example workshops) aimed at fostering young people to become good future network managers/leaders.

*NUSESA should continue its discussions with African Universities and other African organisations with similar goal, for example ANSTI, in order to establish long term collaboration.

1.3 Recommendations to universities/institutes

*It is important that both donors and universities/institutes are aware of the difficulties that arise in any organisation if a multitude of instruments of different brands and design is gathered within an organisation. This is a difficult problem also in industrialised countries, but it is almost impossible to overcome the problem in countries in which infrastructure in services, maintenance and spare parts for the equipment are rarely at hand. To counteract this problem it is essential that the universities and institutes in the different countries adopt a *purchasing and maintenance policy*. Such a policy should be worked out by the leadership of the institutions, after consulting the technical staff and the teachers/researchers, who are ultimately responsible for the utilisation and repair of the instruments/equipment.

*The university leadership should be aware of the crucial role played by technical infrastructure and functioning instrumentation when developing a country. As part of this awareness the leadership should make efforts to rise the *status* of personell involved with maintenance and repair and ensure that they have an adequate influence on the purchasing and maintenance policy.

*The university leadership should recognize its role in promoting NUSESA activities. In countries where university/institution leaders are members of NUSESA, or have shown interest in other ways, there are more workshops and training opportunities than in countries in which the university leaders are unaware.

1.4 Recommendations to Sida/SAREC

*As seen from the material enclosed in this document NUSESA has managed to grow, to organise workshops and training, and raised a lot of interest even under difficult funding conditions. In my view this is because NUSESA activities fulfil a real need in the African countries. It is important that SAREC/Sida continues with support for NUSESA to the regional office and to the Sida-funded national countries with a time horizon of three to five years. During this time NUSESA should have been able to develop means of creating its own funding – wholly or partly – in accordance with what is discussed in the report (selling of information and services etc).

*A major concern is for the regional NUSESA secretariat to obtain adequate funding for the development of the Website with the linked databases containing information on

a) expertise in the region
b) available instrumentation of a certain degree of sophistication and
c) firms/manufacturers who deliver equipment according to ethical rules and customers' expectations as discussed in the report.

SAREC/Sida should take special interest that the Website and databases are developed as fast as possible, since the existence of the information kept in the databases is crucial for making NUSESA able to earn money from other sources.

*In discussions on renewed contracts concerning university support to the Sida/SAREC supported NUSESA countries, SAREC should ask for documentation and the practise concerning the *purchasing and maintenance policy* of the university in question. Funding of new equipment should not be made until such policy is established.

*Sida/SAREC should make other donor organisations aware of the importance in donating *money* for instrumentation in accordance with the purchasing and maintenance policy of the institution in question, that is, without preconditions that an instrument from the donor country has to be bought. In a short-term perspective it may seem attractive for a country to promote equipment manufactured by or in the donor country, but experience shows that the fate of such instrumentation may well be that it is standing in a corner of the laboratory, if backup in the form of spare parts, maintenance manuals, rapid access to knowledge of the instrument in question is missing. Thus, in such cases the tax-payers' money are largely wasted.

2 Background and history of NUSESA

In response to the demand from grantees (scholarship holders) of the Swedish organisation International Foundation for Science (IFS) to address the problem of maintaining and repairing scientific equipment in Africa IFS in 1988 initiated a programme on operation, service and maintenance of scientific equipment with support from SAREC (SIDA), DANIDA, United Nations Fund for Science and Technology for Development (UNFSTD) and the World Bank. The basis for this programme was national workshops for researchers and technicians from institutions depending on scientific equipment, where the participants were taught to operate, maintain, and do some repairs on their own equipment. These workshops also included aspects of laboratory management and purchasing procedures, and they were first designed to be national starting points for addressing the "equipment problems" in the respective countries. In the mid 80s, when IFS had about 1000 grantees, an attempt had been made to analyse the constraints to successful research based on interviews with the grantees. It was then shown that the access to functioning research equipment and laboratory facilities was a major constraint everywhere.

It was thus realised that the "equipment problems" were not local but extended over many countries. One important outcome of the first workshops was the creation of the Network of Users of Scientific Equipment in Southern Africa (NUSESA) in 1989 as a regional network for south African countries. In 1996 – when Ethiopia joined NUSESA – the full name of the organisation was "Network of Users of Scientific Equipment in *Eastern and* Southern Africa". Since the start, the number of participating countries has grown, and today the national members are: Botswana, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Madagascar, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. (See Appendix 1 for a brief account of the status of each country)

Over the years NUSESA has depended to a large extent on financial and administrative support from IFS. At the NUSESA regional meeting in 1996 it was decided to give NUSESA a truly independent and regional status. A headquarter was established in Harare, with IFS support. It was expected that this organisational change would allow NUSESA to approach donors and national or regional authorities from a regional platform, providing skilled expertise from the region to deal with equipment problems, rather than depending on expensive and haphazardly available expertise from overseas.

Although NUSESA is a regional network, its long-term sustainability depends on scientists and technicians working in the local context, in which the "equipment problems" are apparent. The NUSESA countries are therefore encouraged to arrange local workshops and training courses and organise themselves at the national levels. The national NUSESAs are organised in different manners, depending on a number of factors such as the competence involved, the support of national universities and institutes/organisations, the availability of funding, the interest of major donors etc. The broadest aim of the network is to provide a forum for information and discussion on proper purchase, use and maintenance of scientific equipment in the region. With such a broad objective a range of activities could be accommodated under the network programme, e.g. training programmes, service and repair services, inventories, advisory functions, etc. Several of the NUSESA branches have already initiated such activities.

Since the support for the national NUSESAs is expected to come from donors and organisations interested in developing the respective countries, the present evaluation is focused on four countries in which Sida/SAREC has a major interest, namely Zimbabwe, Eritrea, Mozambique and Tanzania.

The membership of NUSESA is mainly drawn from technicians, researchers and lecturers from the universities and research institutions in the region, although its activities have also been beneficial for other scientific equipment users outside these institutions. In South Africa NUSESA is active amongst the former disadvantaged institutions the equipment problems of which are similar to those of the developing countries in the region.

3 Organisation of NUSESA

NUSESA is a regional, non-governmental, non-political body whose principal aim – as noted above- is to promote and encourage proper purchase, use, maintenance and repair of scientific equipment. It is a network which has a "flat" hierarchy and which is to a high degree dependent on voluntary work and enthusiasm from its members. In order to function in the local and national contexts the network is based on nationally organised operations. Each country in the region organises itself into a national network so that the equipment problems can be tackled in a national context. The national self-organisation allows differences in organisation, activity, and mode of operation between the different countries. However, the national NUSESAs function as nodes, which facilitate the exchange of information on scientific equipment, competence and workshops with the regional NUSESA. Each national NUSESA is automatically affiliated to the regional NUSESA if during its formation the NUSESA secretariat is involved, and furthermore the majority members of NUSESA Council of National Representatives (CONARE) agree.

A detailed description of the organisation of NUSESA and instructions for the national organisations can be found in Appendices 2a and 2b. As noted from Appendix 2a CONARE acts as a linking and consultative body to national NUSESAs, to donors and to other interested parties.

Since the activities within the different countries are differing and, furthermore, some national NUSESAs are younger than others also the organisation of the national NUSESAs are at different degrees of maturity. As noted from Appendix 1 the following countries have constitutions, namely Zimbabwe, Tanzania, Zambia, Swaziland and Uganda. Examples of national constitutions for Zimbabwe and Tanzania are found in Appendix 3a and 3b. Many of the other countries have, however, working committees aiming at formulating a constitution, among them Botswana, Kenya, Mozambique, Malawi and Ethiopia. A constitution for the regional NUSESA is presently under way and will be discussed at the coming NUSESA council and equipment maintenance conference in Kampala 3–4 December, 2001.

The total number of individual members has not been evaluated or documented, but is estimated by the Secretary General to be around 1500. It can be noted, that countries with a large membership group are among those with a constitution, namely Tanzania, Zimbabwe, Uganda and Zambia. These have between 100 and 200 members. The rest of the countries have less than 50 members, and in a few countries the number of members is less than 20 i.e. Madagascar, Lesotho, Namibia and Malawi. The members represent widely different scientific and technical fields and have different educational backgrounds. As examples of members from one country with a large number of members and one country with a smaller number of members lists from Tanzania and Mozambique are included as Appendix 4a and 4b. It should be mentioned, that also institutions and other organisations have the possibility to become NUSESA members, for example research institutes and private companies as seen in Appendix 4a.

4 Activities since 1989

The activities within the NUSESA network are in the form of workshops, seminars, training programmes, exchange of information through email/mail, exchange of staff, job training, linkages, contributions to directory of expertise, directory of equipment, directory of institutions. The activities are aimed at all categories of people involved with equipment i.e. administrators, managers, scientists, researchers, lecturers, engineers and technicians. More details on the activites of different categories are given below.

4.1 Regional Workshops

Since the start of the IFS programme regional workshops have been held in a number of countries as shown in Table 1. These workshops were targeted for researchers and technicians from institutions depending on scientific instruments. The participants were taught how to operate and maintain their own equipment. The topics included:

1) the use and maintenance of spectrophotometers, atomic absorption spectrophotometers, flame photometers, microscopes, mechanical and electronic balances, gas chromatographs, HPLC, colorimeters, pH meters, air conditioners, freezers, centrifuges, mixers and other equipment found in the laboratory.
2) basic electricity and electronics as background to the instrumentation
3) health and safety in laboratory
4) procurement and purchasing procedures
5) selection of equipment
6) laboratory management

A total number of about 300 people received training through the regional workshops. Each regional workshop had more than half the number of participants from the hosting country. The criterion for selection of participants was key people in institutions who had some responsibility either on instruments or on laboratory management and administration. In three of the workshops, namely Zimbabwe 1996, Zambia 1997 and Ethiopia 1997 the participants were each given tool kits for use in their institutions.

TABLE 1 REGIONAL WORKSHOPS HELD SINCE 1989

No	Year	Country	Workshop Title	Target Group	No. of Participants
1	1989	Zimbabwe	Equipment Maintenance Training Course	Researchers/Scientists and Technicians	40
2	1990	Tanzania	Equipment Maintenance Training Course	Researchers/Scientists and Technicians	40
3	1991	Malawi	Equipment Maintenance Training Course	Researchers/Scientists and Technicians	30
4	1992	Mozambique	Equipment Maintenance Training Course	Researchers/Scientists and Technicians	30
5	1995	Botswana	Equipment Maintenance Training Course	Researchers/Scientists and Technicians	20
6	1996	Zimbabwe	Equipment Maintenance Training Course	Researchers/Scientists and Technicians	30
7	1996	Zambia	Scientific Instrument Manufacturing and Maintenance	Researchers/Scientists and Technicians	30
8	1997	Ethiopia	Workshop on Maintenance of Scientific Equipment	Researchers/Scientists and Technicians	30
9	1998	Ethiopia	GC Workshop	Researchers/Scientists and Technicians	20
10	1999	Ethiopia	HPLC & GC workshop	Researchers/Scientists and Technicians	20
11	2001	Zambia	Power Conditioning and Lightning Protection	Researchers/Scientists and Technicians	20
	Total trained				**310**

It is worth mentioning that most participants received sponsorship from IFS. However, a number of institutions also sponsored their own staff to attend the workshops.

The workshops were starting points for addressing the equipment problems in the respective countries. The following observations regarding the workshops are made:

- In the first 4 years of regional workshops a team of resource persons was brought in from England to conduct the training. However, as NUSESA grew and developed local resource persons were used more in the later workshops.
- The quality of presentations given by overseas as well as by local presenters was considered to be of high standard.
- Reports from participants after the workshops show that most people have gained important knowledge by attending the workshops
- Some participants were later asked to assist in the maintenance or repair of equipment by other departments and institutions. NUSESA has given attended certificates to qualified staff, and these have been used as evidence in career-advancement.
- Workshop handouts were compiled for each workshop and are available for future reference from the NUSESA Secretariat.
- In a number of cases equipment that had been idle for some time was put into operation again.

- The NUSESA training workshops have generated a lot of interest and there is presently a high demand for more workshops to be done. In particular, the NUSESA countries which not so far had a regional workshop done in them are anxious to have a regional workshop in their countries.

The regional workshops have been useful in strengthening the local NUSESA associations and forum for advertising NUSESA and encourage participants to join the network. There was no formal follow up evaluation done to assess the impact of the workshops. However, reports received by the NUSESA secretariat indicate that the participants were able to use the knowledge gained through the workshop at their work places. During the course of the present evaluation demands on more workshops (two per year) have been expressed by most of the interviewed NUSESA members.

The dissemination of know-how within the areas of interest for NUSESA, has been described in terms of "train the trainers". The basic idea is that if one person is trained at the regional or national level he or she is then in a position to train his(her) colleagues at the local level. Thus, the impact of taking part in NUSESA workshops is larger than would normally be the case for training of individuals. In fact, all of the regional workshops and individual training courses were targeted for "train the trainers", why the number of persons trained (See Tables 1 and 3) will reflect the number of trainers trained.

4.2 National Workshops/Seminars

The success of the regional workshops encouraged the start of national workshops by people who attended the regional workshops and saw the value of this kind of activities. The local scientific equipment users formulated their own activities according to the local training needs. The resource persons used in most cases were locals, some of whom had received training through the regional training workshops. In the 1990s as the computer became popular the need for training in information technology increased, and therefore a number of workshops were directed towards computers, computer networking and interfacing. Other popular topics were those of vacuum technology, power supply and regulations, and use of basic test equipment and tools. Details of workshops held in the different areas are available through the NUSESA secretariat or the national NUSESA representatives or contact persons.

A summary of the types of workshops held is given in Table 2.

TABLE 2. NATIONAL WORKSHOPS HELD BY TYPE

No.	Title of Workshop/Training	Country Held	Objective of workshop
1	Information Technology	Tanzania Zimbabwe	The use computers and information technology in the laboratory
2	Liquid Chromatography, HPLC, Gas Chromatography	Botswana Ethiopia	Use and maintenance of LC, HPLC, and GC
3	Computer Networking	Zimbabwe Tanzania Kenya	To understand computer networking especially applied to laboratory
4	Microcomputer Interfacing	Zimbabwe Tanzania	Interfacing of computers in laboratory activities
5	Atomic Absorption Spectrometry (AAS)	Botswana Zimbabwe	The use and maintenance of AAS
6	Laboratory Management	Tanzania Zimbabwe Swaziland	Proper laboratory management
7	Procurement, Storage and management of scientific equipment	Tanzania Zimbabwe Botswana	Correct procedures to follow when procuring equipment.
8	Health and Safety	Zimbabwe Swaziland	Health and Safety in the laboratory
9	Laboratory Animals Techniques	Zimbabwe	Highlights on techniques and procedures on animals house set up for teaching and research
10	Glass blowing	Botswana Ethiopia	Glass blowing techniques
11	Vacuum Technology	Zimbabwe Malawi	Advancement in vacuum technology
12	Medical Photography	Malawi	Medical photography techniques
13	Biological Micro-techniques in Light Microscopy	Botswana	Preparation of tissues for microscopic studies and skilful use of the microscope and recording of results
14	Repair and Maintenance of Laboratory Equipment	Kenya, Ethiopia Zimbabwe, Eritrea, Tanzania, Mozambique	Repair and maintenance techniques for laboratory equipment
15	Procurement, Maintenance and Servicing of Laboratory Instrument, Fabrication of Laboratory Equipment and Micro-chemistry	Zambia South Africa	Procurement procedures, maintenance and services technique.Fabrication of low cost laboratory equipmentUse of micro-chemistry in teaching science

More than 1000 people are estimated to have so far received direct training through the national workshops activities. Countries, which received support from IFS funds were able to hold bigger national activities. These countries are Tanzania, Zimbabwe, Mozambique, Ethiopia and Eritrea. However, despite the lack of funds other countries have also managed to hold some workshops at institutional level and some in the form of seminars.

In those countries where national workshops have been held reports indicate that people have benefited from the local training activities. Local seminars and workshops are taking place as a follow up of the national workshops.

Although this is not clearly defined, some national training workshops also have applied the concept of "train the trainers". The "trainers" in this case may not be responsible for running workshops but are often chief technicians or heads of sections. As an example can be mentioned that Tanzania had a "train the trainers" programme nationally from 1995. Each year eight people were trained at a central venue and these in turn went back to their 'zones' and trained twenty others in each of four zones. The result was that 160–240 persons were trained by the trainers before the programme was suddenly stopped in 1998/1999.

The activities within national workshops in the different countries reflect the number of members, the status of the members and the interest addressed to national NUSESAs from key organisations in the respective countries. As an example, Appendix 5 gives a list of workshops and meetings in Tanzania.

4.3 Individual Training

A number of people have been sent to other institutions for training through NUSESA. The training included training at institutions in the region as well as training in other countries, for example at the Precision Instrument Development Centre (PIDC) in Taiwan, at the ICAT Luton University in England and at the University West of England in Bristol. A summary of the institutions and training offered is given in Table 3 below.

A further seven persons were sponsored through NUSESA to attend the Africa Federation of Technological Health Institutions Summit in Harare, Zimbabwe, in 1998 and two persons were sponsored to attended World Federation of Technological Organisations (WFTO) summit in Cape Town, South Africa, in 1998.

People sent to the individual training activities were usually nominated by their institution to receive the training that had been identified as important for the institution. In some cases the individual or institution approached NUSESA for assistance. The training in England was especially adapted to suit the needs of the trainees. Each participant was expected to be able to make a positive contribution to his or her institution.

TABLE 3 INDIVIDUAL TRAINING COURSES

	Institution/Country	Training received	Benefiting Country	Number of participants
1	ICAT, Luton University, England	Use, repair and maintenance of laboratory equipment including, HPLC, GC, AAS, IR, UV/VIS, pH meters	Zimbabwe Tanzania Mozambique	3 2 1
2	University of the West of England UK	Use, repair and maintenance of laboratory equipment including, HPLC, GC, AAS, IR, UV/VIS, pH meters	Mozambique	2
3	University of YaondeCameroon	Control of HIV Infection in the Developing World	Zimbabwe	1
4	SPALNA Cameroon	Good Laboratory Practises and Information Management for Supervisors	Tanzania Ethiopia Zimbabwe Mozambique	2 1 1 1
5	Jeol Ltd., Japan	Operation and maintenance of GC/Mass Spectrometer	Zimbabwe	1
6	Drugs Council, Zimbabwe	HPLC	Zimbabwe	3
7	PIDC, Taiwan	Instrument operation and maintenance	Botswana, Mozambique Tanzania Malawi Zambia Zimbabwe	6 6 6 6 3 10
8	SPALNA Nigeria	Good Laboratory Practises and Information Management for Supervisors	Zimbabwe Zambia Ethiopia Tanzania	3 1 2 3
9	Trieste, Italy	Microprocessor Training	Mozambique	2
10	South Africa	Computer Training	Mozambique	1
11	Hungary	Instrument operation and maintenance	Zimbabwe	2
Total				**69**

4.4 Spare Parts Fund

The "equipment problem" in developing countries has many dimensions, such as lack of trained persons, lack of maintenance manuals and lack of spare parts. The latter problem has been addressed by IFS, who made a spare parts fund available that helped to put a number of faulty equipments in the region back into working condition. About 100 000 SEK was obtained from various donors for a special spare parts fund. The following institutions benefited from the programme:

University of Zimbabwe, Zimbabwe
University of Eduardo Mondlane, Mozambique
University of Dar es Salaam, Tanzania
Sokoine University, Tanzania
University of Malawi, Malawi
University of Zambia, Zambia

Details of which institution benefited and what spare parts have been obtained are available from IFS who were controlling the fund.

4.5 Newsletters

Information about NUSESAs activities to its members as well as to users of scientific equipment in general is an important instrument for keeping up interest and know-how and for making NUSESA "visible" to the world outside the network. IFS recognized the need for dissemination of information, and therefore planned for a newsletter and also for dissemination of some of the training manuals produced for training courses. The first efforts in this direction materialised in training manuals for courses conducted by ICAT in Luton, England. An attempt to arrange publishing of a regional newsletter was made by an agreement with NUSESA Mozambique. This, however, did not materialise due to lack of funding.

When the regional office was established in 1996, a simple publication started to circulate amongst members from May 1997. The newsletter emphasised regional activities that were done by counterparts in the region. The newsletter included articles on scientific instruments that would be of interest to NUSESA members. In 1998 - with more funds being made available by IFS - a more professional production of the newsletter was started (See example in Appendix 9). In some newsletters adverts from a few regional suppliers were also included. In 1999 an electronic bulletin was circulated. No funds were, however, available to make a printed version for circulation. In 2000 a small publication was issued highlighting activities.

5 Financing of NUSESA

Since the start of NUSESA the activities mentioned above have been heavily dependent on financing through IFS and Sida. Until 1998, funds came only through IFS, but in 1998/99 SAREC/Sida took over sponsorship of NUSESA directly. The development of the funding situation is shown in figure 1 (See also Appendices 6–8 for exact figures).

As seen in figure 1 there has been a dramatic decrease in the funding situation from 1989 to the present time. The funding of activities in national NUSESAs are not generally included in figure 1 (unless channelled through the regional office), and one also has to bear in mind that much of the work is done on a voluntary (non-paid) basis by the NUSESA members. In Appendix 5 it is interesting to note that quite a number of workshops and meetings in Tanzania have taken place without access to international sponsors.

Before 1999 funds obtained only benefited a few countries that were supported by the donors. In the case of SAREC/Sida it was Tanzania, Mozambique, Ethiopia, Eritrea and Zimbabwe. Other national NUSESA members are concerned about this and want funds to be given to NUSESA but not to specific countries. However, it seems at present that this can be difficult to achieve, since most aid comes under bilateral agreements.

It should also be noted, that some countries (for example Tanzania and Zimbabwe) have introduced a member fee for the NUSESA members. The fee can be as "joining fee", paid when one joins NUSESA and/or as the "subscription fee", paid yearly. In Zimbabwe the proposed joining fee is Z$150, and the subscription fee is the same (Z$150) per year. However, it is not likely that these fees will give a large financial contribution to the budget; at present they have a more symbolic function.

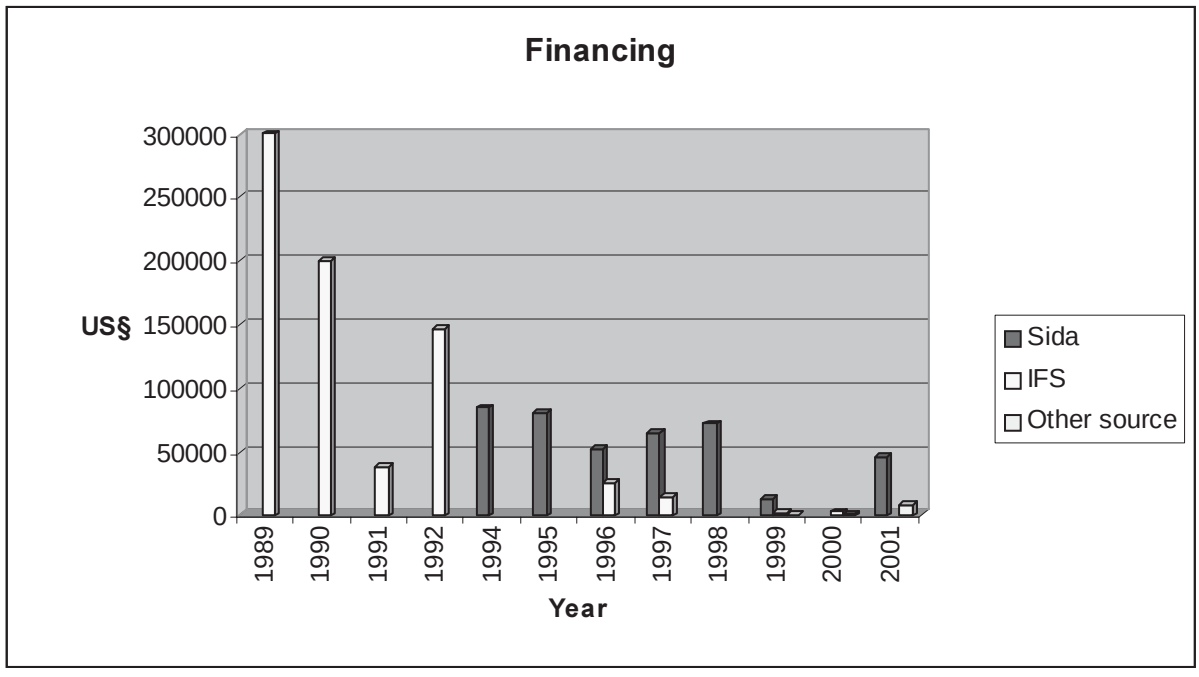

Figure 1. The funding situation of NUSESA from 1989 to 2001, channelled through the regional office. Note, that also other national/local activities have taken place in which the funding has not been included in this figure (See also Appendices 6–8). From 1994 and onwards the funding from IFS was also originating from Sida.

6 Possibilities and problems

6.1 Overview of the present situation

From the accounts given above it is clear that NUSESA has managed to deepen the awareness regarding the necessities and conditions of equipment maintenance at universities and scientific institutions in the region and to assist in developing further knowledge and skills regarding maintenance strategies and organisation. The increase in general awareness of the equipment problem is illustrated in the growth of NUSESA from 5 countries to 15 countries during the studied period.

When studying the contents of the workshops, and the problem of maintaining functioning equipment in African laboratories, it is evident that the task of maintenance and repair is urgent for many different kinds of instrumentation, ranging from small-scale mechanical and electronic instruments, PCs etc, which are usually addressed in mechanical and electrical/electronics workshops, to more advanced, computerised and modern instrumentation, for example chromatographs, electron microscopes, atomic absorption spectrometers, work stations etc. However, there are also elements in the workshop programmes that are common to all kinds of equipment, like the need for good laboratory practise and management, quality assurance and standards, repair manuals, access to advanced technical competence, to mention a few important points. Thus, the contents of the workshops should address all these problems, and it is therefore not surprising that there exists a long list of urgent workshops suggested to occur in the near future.

The general trend in the industrialised countries is that the potential and complexity of the more advanced scientific instrumentation is increasing with time, and most of the advanced instruments are nowadays computerised. In a future perspective this development towards more knowledge-intensive, highly performing instruments is expected to grow even faster. It is therefore rather sad to see that the funding of the NUSESA activities has decreased, while instead an increased funding would be needed to keep up the present position of NUSESA-activities.

There are large differences with respect to activities and organisation between the four different NUSESA countries, Zimbabwe, Eritrea, Mozambique and Tanzania as experienced during my visits to the countries as well as from the documentation at hand at IFS and at the Regional secretariat. As already mentioned Zimbabwe and Tanzania are characterised by the fact that they have a constitution, a high number of members and a diversity of affiliation/background of the different members, whereas this does not seem to be the case for Mozambique and Eritrea. As examples of how the national NUSESAs have developed in two of the countries it is interesting to compare the lists of members in respectively Tanzania with those of Mozambique, in Appendices 4a and 4b. As seen from these, there are people with very different functions and background present among the members of NUSESA-Tanzania, whereas in Mozambique, the main interest for NUSESA comes from people attached to the medical and veterinary faculties.

The lower activities in Eritrea and Mozambique on one hand as compared with those in Zimbabwe and Tanzania, are partly – but not wholly -explained by the fact the Eritrea has had a difficult time due to war with Ethiopia. Mozambique has had to restructure the national NUSESA due to key persons leaving the organisation. However, in all four cases there are at present responsible persons with close connections to the university sector.

6.2 General problems in the area of equipment and maintenance

The problems that the NUSESA activities aim to solve are interconnected, although they are also of somewhat different character. However, in the section below I will try to address them one by one for the sake of clarity.

6.2.1 The attitudes of the manufacturing firms/agents

As noted above several issues need to be addressed for securing long life and good use of scientific instrumentation, namely those of proper training of scientists and technicians, spare parts in store for the most vulnerable components of an instrument, a detailed and instructive repair manual, in which possible (common) malfunctions and their causes are listed in a language which the staff can understand, and backup services from the firms/agents who have originally delivered the instrumentation. The exact demands are of course dependent on the degree of sophistication of the equipment in question. General observations made during my visits to workshops and laboratories in the four countries of Eritrea, Tanzania, Zimbabwe and Mozambique were that the technical staff and the scientists generally work hard to make the instruments function, but that they are indeed faced with an almost impossible task. This is due to the following:

a) For many instruments no repair manual or detailed information was available. This was due to several reasons. Sometimes the equipment was old, and the information (if it ever existed) had been lost during the years. In many cases, however, the need for a repair manual was not recognised by neither the institution nor the donor at the time of purchase. Thus, for many instruments repair manuals and information on critical parts/functions of the design of the instrument is missing. When the users in developing countries ask for repair manuals the manufacturers are not often willing to give adequate information and backup. From the perspective of industrialised countries this attitude may seem rather natural, since the companies try to "protect" their technical innovations in the instrument. Thus, they do not want to reveal too much to the customer. For the technical staff in a developing country, however, a detailed repair manual is often as essential as the instrument itself.

b) There was a general lack of access to critical spare parts, and in some cases new equipment had been delivered with some small (but essential) part missing. It seems that it should not be very difficult for a manufacturing company to identify the most critical components in a complex instrument and supply these (with adequate instructions) at the time of purchase.

c) On some occasions the firms/agents who had delivered the equipment were difficult to reach, and did not respond to fax, telephone or e-mail. (In one case with a new instrument lacking a small but essential part three months of trials to get in contact with the firm had not given any result, why a country in the west had to be involved to get the missing part into place.)

d) There is a general worry over high costs if an expert from Europe, US or Japan has to be called in to put an instrument in order. The African countries simply do not have access to the money needed.

-When visiting the workshops and discussing with the people involved one gets the impression that very often the companies/firms do not show proper respect for the customers in the African countries. It is easy to get a feeling that the customers in developing countries have low priority in the eyes of many manufacturers. This attitude is more pronounced towards the very poorest countries.

6.2.2 Are donors aware?

A major purpose with foreign aid from donor countries and organisations is that the developing countries should move into sustainability and be able to manage research, education, technical and social infrastructure etc by their own efforts and initiative. This philosophy also applies to the technical infrastructure at universities, research institutions and private companies. – Problems in purchase,

maintenance, and repair of technical systems and single items were found to be aggravated by the fact that many of the instruments – aiming at filling the same purpose – were delivered from different firms around the world; each firm with its own (secret) design and special components. This observation is valid for both high-tech instrumentation (for example computerized analytical instrumentation) and for simple every-day electronics and mechanical items. To give examples of this I will just mention the case of an electronic workshop in one of the countries, which had more than twenty broken PCs of different fabrication and design. Because of incompatibility between the different PCs it was impossible to use the intact parts of one PC to repair another broken PC. Of high-tech instrumentation, for example a kind of spectrometers, I saw a case of two instruments of different brands that had been donated to two adjacent institutions. When one instrument broke down it was not possible to repair by spare parts designed for the other.

This situation could be improved if donors acted according to the philosophy that donors should give *money*, but refrain from donating equipment manufactured by firms from their own respective countries. It may seem natural for a donor country to "promote" equipment from firms in its own country, but it may often be counterproductive if the infrastructure for maintenance and repair, and a proper back-up, is not available in the developing countries. Then in effect the "gift" may have been given in vain and be a cause of frustration rather than an asset for the institution that has received the gift. There are, in fact, numerous stories of very expensive equipment "standing in a corner" in African countries. Even if the stories are not completely true, their message should be taken seriously by donors. The donors should thus be fully aware of the necessity to consider the whole chain of acquisition, installation, operation, technical infrastructure, maintenance and repair if they expect the instrumentation to operate in an optimal fashion for a long time.

Furthermore, the receiving institution/university/country should develop and implement a *purchasing and maintenance policy*, to ensure that different instruments are as far as possible compatible. This means in practise, that only a few brands of computers, spectrometers, electron microscopes etc would be recommended during a certain period of time after an open competition has taken place among companies (world-wide). The institution/university/country would have to stick to the selected companies for a number of years, and then engage in a new round of offers. - Many universities in western countries have put this system into practise to the benefit of the teachers, students and technical staff, although one could argue that "odd items" and instrumentation is not such a problem in western countries with numerous firms and dealers and a well-developed maintenance expertise at close distance.

6.2.3 The status of activites related to repair and maintenance

One observation made during my visits to the four Sida/SAREC supported countries is that the countries with a high number of NUSESA members and a lot of activities have a wide range in the knowledge of the different members both with regards to areas of expertise and to the job profiles of the members. These countries also have a "supercritical" number of active members of high status (for example heads of departments/institutions etc). Active interest in the "equipment problem" on the part of the vice chancellors, deans, managers etc is a necessary precondition for developing a realistic purchasing and maintenance policy.

In western academic tradition it has for hundreds of years been considered to be of higher status to do theoretical and abstract work than to deal with practical matters. (Maybe this is an heritage from the Greek philosopher, Plato, for whom "the world of ideas" had a higher value than the actual reality). In African society, in which many of the scholars have been trained in western countries there is a risk that the attitudes of the traditional western scholars are accepted without much thinking. Thus, in my view it is necessary to have a critical ongoing discussion of academic values within the African universi-

ties, and to give proper credit to persons who are able to solve practical problems. But, to influence attitudes usually takes a long time. Therefore, it is important that the leaders take an active interest in the discussions on academic values in relation to the needs of their countries.

Another problem related to the higher status of theoretical work is the relative lack of status of the technical staff and the high esteem for everything that is "new" or "modern". Thus in western countries, new ideas, designs and knowledge etc have been more highly rated than maintaining and developing the existing technology and/or knowledge. In most universities – also in science and engineering – subjects like "maintenance technology" have not even been introduced in basic university courses. As part of this general attitude, the status of the technical staff has not been very high, and within the NUSESA network information exists on scientists of high academic rank, who have tried in vain to make an instrument work, and not bothered to ask the advice of the technician next door, who knew the solution to the problem! Only in very recent years – with the increased awareness of environmental matters – has some credit been given to maintenance and repair because of the relevance for the concept of sustainable society.

It is an important task for NUSESA to contribute to increased status for solid technical and practical competence and experience. There are, however, good examples within the NUSESA countries of an increasing awareness of the need for close collaboration between the technical staff and the researchers. As an example can be mentioned a lady technician in Botswana, who has now been nationally recognised for her involvement in NUSESA-activities, and who has managed to get funding for six people to take part in the coming conference in Uganda.

6.3 A vision for a sustainable NUSESA

In a long-term perspective it is important that NUSESA becomes sustainable and can stand on its own feet, without too heavy dependence on donors. In this section the possibilities for achieving this situation will be discussed. It is, however, important to mention that the NUSESA secretariat is working on a plan to make NUSESA sustainable. In order for the plan to work in practise, NUSESA will need staff who will work full time with NUSESA activities. At present NUSESA is entirely dependent on voluntary contribution from members, and this includes the regional secretariat. At the same time it is easy to see that the workshops, training and information that NUSESA is providing has an economic as well as a societal value.

6.3.1 Organisation of NUSESA; relation to universities and other organisations.

A question of relevance for the future of NUSESA concerns its present and future organisation. One basic question is whether a network is strong and co-ordinated enough to become a driving force in the development of more widespread technical competence in maintenance and repair technology. SAREC/Sida raises the question whether the resources from donors instead should be addressed to universities/faculties of the engineering rather than to NUSESA. There is also an open question whether NUSESA should be linked to some other recognised regional organisation. (See ToR in Appendix 10).

Other panafrican networks often have a more limited purpose or are sometimes established as projects or address a specific group and are not open to others. However, NUSESA already has very good relationships with the following panafrican networks:

1. SPALNA – Soil and Plant Analytical Laboratories Network in Africa
   Collaboration has taken part in training people on equipment in the Soil and Plant labs and a number of NUSESA members are working in these laboratories.

2. NAPRECA – Natural Products Research Network for Eastern and Central Africa.
   Collaboration has taken part with training in courses dealing with analytical equipment used in natural products research

3. NABSA – Network for Analytical and Bioassay Services in Africa
   Some NUSESA members are also part of this network.

4. AFRA – Network on nuclear equipment initiated by IAEA
   Some NUSESA members are in this network, and NUSESA has been invited to their workshops and planning meetings.

5. AFTH – African Federation of Technology in Health
   The Secretary General took part in their summit in 1998 and has been invited to make comments on their policy documents. Included in information circulated.

6. WFTO – World Federation of Technology Organisations
   Associate member of NUSESA have been asked to be in their 'developing the maintenance culture programme'.

7. UNESCO
   NUSESA has been invited to their establishment of a maintenance centre in Tanzania

8. ANSTI – African Network for Scientific and Technological Institutions
   ANSTI is a project that received funds through UNESCO. Most African Universities are members of ANSTI. In the early 90's ANSTI organised workshops on organisation and management of equipment maintenance at African Universities. Workshops have been conducted in for example Kenya, Sierra Leone and Zimbabwe. In a recent meeting in Tanzania some NUSESA members were involved. There are clear common interests between ANSTI and NUSESA. However, I get the impression that NUSESA is more informal, flexible and "bottom-up", and include a wider spectrum of different people and organisations. It is an advantage in NUSESA that also other institutes and enterprises than those affiliated with universities can become members, and also host NUSESA. It might, however, be interesting to discuss the overlap and differences between the two organisations more thoroughly in order to find out how they can co-operate in an optimal manner.

Some other interesting organisations/networks are:

ALNAP – African Laboratory for Natural Products
FOSNA – Food Science Network for Africa
SARBIO – Southern African Regional Co-operation in Biochemistry, Molecular Biology and Biotechnology

As seen from the list above, some of the networks address similar questions as NUSESA, but are more directed towards specific sectors (especially within the bio-medical field). They have also a varying degree of activity. It is hard to point out any specific network of the above organisations as a preferred partner to NUSESA. I therefore recommend the present situation with collaboration on specific workshops and areas of interest to continue until some of the organisations see a win-win situation in linking up closer with each other.

As shown in the previous sections the main drawback with the present NUSESA organisation has been the large variability in the financial support for the NUSESA activities. The regional secretariat and the Council of National Representatives have repeatedly made extensive plans for regional and national workshops of high relevance and urgency, but at times these have been difficult to carry through due to lack of financing. This has been a difficult problem to address, and it is evident that for any organisation such a large uncertainty concerning the budget will affect the long term planning. Many things

that need to be done have been delayed and/or postponed. It seems therefore necessary, that NUSESA has funding which is set for a period of at least three years. A special feature of NUSESA is that it has the form of an association, which means that it can have its accounts in dollars or other foreign money. This is a stabilising factor in countries in which the rate of inflation is high.

On the positive side, speaking in the favour of NUSESA, is the fact that NUSESA has managed to grow and engage participants in fifteen countries, in spite of the financial difficulties. This would not have happened if its function and aims had not been recognised to be of high relevance and value.

As discussed in the preceding sections the most active national NUSESAs recruit members from several universities, faculties and also institutes and private firms. To place national NUSESAs in one university or faculty might endanger the broad participation in NUSESA across faculties, universities and institutes. The need for maintenance, service and technical support is high in many areas of competence, and it is interesting to note, that in a country like Mozambique the persons responsible for veterinary and medical techniques are almost the only ones presently involved in NUSESA (Appendix 4b). The challenge for Mozambique is to recruit members from other areas of competence, among those some of the leading people in the university sector.

The organisation of a network is inherently more complex than that of an organisation with a strict hierarchy and is therefore more difficult to govern. Such an organisation is strongly dependent on good leaders (secretary general/chairpersons) at the regional as well as the national level. Therefore, the organisation is more vulnerable, at least in a short perspective. On the other hand the present network organisation has advantages in terms of being more democratic and "flat" than most other organisations. Accordingly, there are pros and cons in the present structure. NUSESA may decrease some of the vulnerability by initiating activities with the purpose of fostering new managers/leaders. This can be done by addressing special maintenance workshops and courses to the young generation at masters level. Since the future leaders in science and technology will need a combination of skills of technical and managerial nature such workshops could for example contain both practical "hands-on" exercises and overview lectures on project management and leadership. The older NUSESA generation will be an important resource as teachers and instructors in this context.

A subject that has not been addressed in the previous text is that of gender. From the documentation enclosed in the appendices it can be noted that there are relatively few female members in the NUSESA network. This may be due to the fact that there are very few female technicians (also in western countries), and the fact that there are also few women in science and technology, both at universities and in institutes. However, the women interested in NUSESA seem mostly to be working in organisations devoted to medicine, agriculture or veterinary sciences. Since these professions recruit a relatively larger number of women than traditional technical subjects the best policy for NUSESA is probably to encourage the female NUSESA members to recruit even more members among their friends and colleagues, in order to become a stronger and more "visible" group. The NUSESA network organisation in a "flat" hierarchy makes it easy for interested women to become active members.

There may also be a limit to the growth of NUSESA in the sense that too many participating countries may be difficult to handle at the regional level. The regional secretariat is aware of this problem, and has responded by delegating more tasks to the national NUSESAs. As pointed out previously the national NUSESAs have a large freedom in organising themselves, and adopting constitutions that are accepted at the national levels.

In summary I think that NUSESA has an interesting organisation and to some extent is a forerunner among networks. The fact that members from many countries are involved in joint workshops and communicate with each other will facilitate exchange of experts within the region. This is of high value

both in training and in actual repair and maintenance work. On the other hand one should be aware of the difficulties in managing such a complex and diverse organisation. It has to be said that the leadership of NUSESA itself at both regional and national levels demands special qualifications of the persons involved. It would be wise for NUSESA to identify the expectations and demands placed on the leaders, and to train new young people, so that a transition from the present leadership to a new one will be done smoothly when that time comes as noted above. It is not urgent at the moment, but I think NUSESA should take up the issue of leadership/management of organisations in a future regional workshop (to train the future leaders in the spirit of "training the trainers")

6.3.2 Ways of achieving sustainability

In order to achieve sustainability it is essential that NUSESA makes use of the advantages it has with respect to a large number of dedicated and enthusiastic persons, who together represent a wealth of experiences and know-how. This know-how is not only an asset in the respective organisations of the members, but should also be utilised to generate income for NUSESA, and thus make it sustainable in the long run. Thus I see a range of possibilities for NUSESA to engage in income-generating activities. Some of these are discussed below.

6.3.2.1 Services and competence

1. NUSESA should act at the national as well as the regional level as an *advanced consultant* in repair, maintenance and purchasing of equipment to universities, research institutes and companies (national and private)

2. NUSESA-members could *provide teaching* in good laboratory practise, maintenance technology and repair, and in use of advanced instrumentation in the form of short courses at universities, colleges and high-schools etc. The national NUSESAs could take responsibility also for developing these courses and for engaging the right kind of competence into the courses. If needed, the national NUSESAs can mobilise competence in another NUSESA country. An important part of activities in education concerns publications (laboratory handouts, manuals and textbooks). The teaching activities would have the advantage for NUSESA of making the network visible to teaching staff in universities and schools that in turn will facilitate recruitment of new members.

3. NUSESA has a big challenge within *the information sector*. CONARE and the regional secretariat have already identified this task, and work has been initiated in some countries.

Important tasks that need to be completed in the near future are to:

- *Develop the NUSESA Website and Newsletter* with information on coming events, workshops, courses, conferences etc of relevance for NUSESA members. A good foundation for the newsletter already exists (Appendix 9), but this can be developed further. As the number of NUSESA members is growing it might be wise to structure the information on instruments either in maintenance areas (mechanical, electronics-IT, analytical instruments etc) or in relation to degree of sophistication.
- *Develop the databases linked to the Website* on
  a) information on *areas of competence* of NUSESA members, willing to act as teachers or consultants and
  b) information on *advanced scientific instrumentation* available in laboratories around the member countries, which could be hired (or lent) for performing research or investigations. For the instrumentation a policy has to be worked out concerning criteria for which instruments shall be included in general information, and which can be left out in order not to overflow the database.

6.3.2.2 NUSESA as "scientific equipment consumers movement"

To come to terms with the difficulties discussed in section 6.2.1 NUSESA should initiate a "consumers movement" at the regional level and *make a database, attached to the Website over recommended firms/manufacturers/agents* that fulfil NUSESA criteria for ethical behaviour and adequate service in selling, maintenance and repair of scientific instruments. After CONARE has established criteria for what should be expected from a firm delivering scientific equipment, a database should be established containing the information only on firms that live up to consumer's expectations. When the database is established the recommended firms could be allowed to advertise – against payment – on the Website.

A database on criteria and on recommended firms/manufacturers is also of interest in the context of working out purchasing policy for the universities. If the "scientific equipment consumers movement" is successful and has credibility it can have a large impact on the policy of manufacturers/firms dealing with equipment, not only in Africa but also across the world. Reliable information on how the firms/manufacturers deal with the needs of the customers is valuable not only for major donor organisations but also for private and public companies.

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Appendix 1

Brief account of establishment of NUSESA in the region

1. Eritrea

Joined 1998

Contact person:
Dr Tesfamichael Haile, Chemistry Department, University of Asmara.

Membership: Technicians, Researchers and Scientists. Most institutions in Asmara are aware of NUSESA.

Works through the Contact Person

Activities:
Two people attended the NUSESA maintenance workshop in Ethiopia in 1997
Held own workshop in December 1999 with funds from SAREC given through IFS.

Need for more activities to be done. Would need assistance with organising activities.

2. Ethiopia

Joined 1996

Contact person
1996–1999 Prof. Ermias Dagne, Chemistry Department, Addis Ababa University
1999– to date Engineer Solomon Zwede Director of National Equipment Maintenance Centre
Membership: Technicians, Researchers, Lecturers, Engineers, Technologists

Works through a committee

Activities:
Two people attended the NUSESA regional workshop in Zimbabwe in 1996
One person attended the SPALNA workshop in Cameroon in 1997.
A number of activities took place during Prof. Dagne time. Three Regional workshop in 1997, 1998 and 1999. Activities were funded by SAREC through IFS.

Need for activities to be revived. No funds yet available for national activities.

3. Uganda

Joined 1999

Contact person:
Prof. Bernard Kiremire, Chemistry Department, Makere University

Membership: Technicians, Researchers, Lecturers, Engineers, and Technologists Members from Universities, Polytechnics and Research Centres in Uganda.

Have adopted a constitution for NUSESA Uganda.

Activities:
Seven people attended NUSESA regional workshops in Zimbabwe (1996), Ethiopia (1997), Ethiopia (1998), Ethiopia (1999) Zimbabwe (1999) and Zambia (2001)

Very keen to get going. Will need assistance in order for enthusiasm not to fade.

Are hosting a NUSESA conference and NUSESA Council meeting this year.

4. Kenya

Joined 1998

Contact person:
Mr Anzelmus Matini, Institute of Nuclear Sciences, University of Nairobi

Membership: Technicians, Researchers, Lecturers, Engineers
Present Members from Universities, Polytechnics and Research Centres in Nairobi.

Works through a committee.

Activities:
Held a workshop in 1998. Very keen to start but slow progress due to lack of funds.
Two people attended NUSESA regional workshops in, Ethiopia (1997), Ethiopia (1998), Ethiopia (1999) and Zimbabwe (1999).

5. Tanzania

Founder member 1989

Contact person:
Dr Edward Mhamhilawa, Physics Department, University of Dar es Salaam

Membership: Technicians, Researchers, Lecturers, Engineers
Members from Universities, Polytechnics and Research Centres throughout Tanzania. Have five zones with committees in each zone. National recognised association.

Have constitution adopted in 1990

Activities:
Submitted proposal to IFS in 1994 for funding of activities. Emphasised on train trainers' programmes.

Regional workshop in 1990. National workshops each year from 1994 to 1997. Zonal workshops after each National workshop.

At least one participant sent to each regional workshop. Three people sent to SPALNA workshops in Nigeria and Cameroon.

6. Malawi

Founder member 1989

Contact Person:
Mr Dennis Kumkwawa (since 1996), Department of Physics, University of Malawi, Zomba

Membership:
Technicians, Researchers and Lecturers. Technicians are the ones who are mainly active.
Members are from University, Agricultural College and Research Institutions.
NUSESA works closely with the technicians association.

Works through the Contact Person

Activities:
Held second Regional workshop in 1991.

No major activities happened first due to inactivity of first country co-ordinator. Since 1998 the members have been keen to do some activities but lacked funding.

7. Mozambique

Founder member

Contact person:
Mr Eduardo Jeronimo, Ministry of Health, Maputo

Membership: Technicians and a few Researchers and Lecturers. Members from University, Ministry of Health and Research Institutions in Maputo.

Works through the Contact Person

Activities:
Held a National workshop in 1992 and another one in 1999. A few activities taking place nationally due lack of publicity. Have potential for growth with funding and encouragement.

8. Zambia

Founder member

Contact Person:
Mr Herbert Songolo, Department of Soil Science, School of Agriculture, University of Zambia, Lusaka.

Membership: Technicians, Researchers, Lecturers and Engineers,
Members from Universities, Food and Drug, Ministry of Health and Research Centres in the country.

Have constitution adopted 1997.

Activities:
Regional Workshops held in 1996 and 2001. Have enquired tools and have keen resource persons on electronics and can develop into regional centre for design and fabrication.

9. Zimbabwe

Founder member 1989

Contact person:
Mr Samuel Chimsoro, Department of Applied Chemistry, National University of Science and Technology, Bulawayo

Membership: Technicians, Researchers, Lecturers, and Engineers

Technicians outnumber the lecturers, researchers and engineers.
Members from Universities, and Research Centres throughout Zimbabwe.

First, to have constitution adopted in 1990

Activities:
Regional workshops in 1989 & 1996. National workshops each year from 1994 to 1997. Have had localised workshops also on Information Technology and Networking. Would do a lot if funds are made available.

10. Botswana

Joined 1991

Contact person:
Ms Mansthabo Sejo, Department of Chemistry, University of Botswana, Gaborone.

Membership: Technicians, Lecturers, and Researchers, Members from University, Agricultural College and Research Centres.

Works through a committee.

Activities:
Regional Workshop in 1995, Hosted Annual General Meeting for NUSESA Council in 1996 and 1999.

Have regular training programmes involving small numbers. Very active group of academics and keen to be resource persons.

11. Namibia

Joined 1997

Contact Person:
Mr Billy Kaonjua, Faculty of Science, University of Namibia, Windhoek.

Members: Technicians, Lecturers and Researchers.
Membership from University, Technikon, Research Centres and Ministry of Health.

Works through the Contact Person

Activities:
Going through a publicity exercise, keen to get going but no progress due to lack of funds.

12. South Africa

Joined 1998

Contact Person:
Mr Charles Wentley, Department of Microbiology, University of Western Cape, Cape Town.
Members: Technicians, Lectures and Researchers.

Membership from University of Western Cape, Vista University, University of North, and Technikons.

Drafted Constitution still to be adopted, in meantime works through Contact Person.

Activities:
One person attended workshop in Botswana in 1995. Three people attended workshop in Zambia in 1997. Had first national workshop in 1998.

Localised training programmes on going. One university has developed a team to repair equipment.

Are keen to help others in the region to source equipment and recommend suitable suppliers.

The need is more on individual training programmes since training is easily available in South Africa.

13. Lesotho

Joined 1998

Contact Person

Mr Mosotho George, Faculty of Science, National University of Lesotho

Members: Technicians, Lecturers and Researchers

Membership from University and Research Centres.

Works through the Contact Person

Activities:

One person attended workshop in Botswana in 1995. One person attended workshop in Zambia in 1996.

No national activities have done yet. Need for assistance and encouragement. The number of members may be small and activities may be joined with South Africa or Swaziland.

14. Swaziland

Joined 1998

Contact Person
Mr Brian Mthupha, Department of Chemistry, University of Swaziland

Members: Technicians, Lecturers and Researchers

Membership from University, School of Technology and Research Centres.

Has Constitution.

Activities:
One person attended workshop in Botswana in 1995. One person attended workshop in Zambia in 1996.

Held national workshop in 1998.

Becoming one of the very active members of the network. Managed to source funds from UN-SECO for workshop in 2001.

* Madagascar has recently entered into NUSESA and has not given any account of activities

Appendix 2a

Constitution of NUSESA (Zimbabwe)

1. The Association

1.1 The Name of the Association (hereinafter called 'NUSESA' is NETWORK OF USERS OF SCIENTIFIC EQUIPMENT OF SOUTHERN AFRICA (ZIMBABWE)

1.2 The headquarters of NUSESA will be situated in HARARE Zimbabwe.

2. Aims

2.1 The Principal aims of NUSESA are:

2.1.1 To Promote knowledge to members of NUSESA and the general public with regard to the development and use of scientific equipment.

2.1.2 To encourage, in the development of the application of Scientific Equipment.

2.1.3 To facilitate the exchange of views between members of NUSESA on proper purchase, use and maintenance of Scientific Equipment.

2.1.4 To encourage research and development in, and to actively seek to improve techniques and knowledge of, proper use and maintenance of Scientific Equipment and to disseminate this information amongst members of NUSESA and the public through the medium of circulars, publications, seminars, lectures, conferences, or by any other method which NUSESA may from time to time deem fit.

2.1.5 To establish and maintain facilities for the collection and use of data base relating to the Scientific Equipment and Users of Equipment in the country and region.

2.2 For the better attainment and furtherance of the aforesaid principal aims, NUSESA shall have the following subsidiary powers:

2.2.1 To provide facilities for enquiry into the Scientific Equipment problems

2.2.2 To encourage organizations or individuals, whether members or not, to undertake voluntary work for the purpose of furthering the aims of NUSESA.

2.2.3 To co-operate or affiliate with institutions in Zimbabwe or elsewhere having aims in whole or in part similar to those of NUSESA.

2.2.4 To establish or develop branches of NUSESA and such other subsidiary bodies as may from time to time prove desirable.

2.2.5 To borrow or raise money for the purpose of NUSESA on such terms and such security as may be thought fit.

2.2.6 To invest the monies of NUSESA not immediately required for its current expenditure in such a manner as may be deemed fit.

2.2.7 To receive grants and donations under conditions acceptable to NUSESA.

2.2.8 To open and maintain banking accounts, whether current, savings fixed deposits, with any registered commercial bank, building society or registered commercial institution, as the Council may from time to time decide.

2.2.9 To do all other lawful things as may be thought by the Council to be conducive to the attainment of any of the forgoing aims.

2.3 NUSESA shall not support any proposal or endeavor to impose on, or require to be observed by its members or others, any regulation, restriction or condition which, as an aim of NUSESA, would make it a grade union or employer's organization.

3. Membership – Classifications and Voting Rights

3.1 Membership of NUSESA shall be open to all users of Scientific Equipment.

3.2 At any meeting of NUSESA when a vote is taken either by show of hands or ballot, the rules regarding votes shall be:

3.2.1 All paid up full members shall be entitled to one vote each.

4. Entrance to Membership

4.1 All applicants for or nominations to membership of NUSESA must be sponsored by two members of NUSESA. Sponsors are responsible for attesting to the accuracy of the information submitted and the character of the applicant or nominee.

4.2 The Council may in its absolute discretion and without assigning any reason therefore, admit or refuse to admit any person (provided that admission shall observe the rules of membership) and such refusal or admission shall be minuted.

4.3 Every member shall be bound by this constitution and shall further to the best of his ability the aims and interest of NUSESA.

5. Classification of membership

5.1 Member

A person is elected, as a member shall, at the time of application or nomination, have a minimum of a technical qualification e.g. City of Guilds Part Two or its equivalent.

5.1.1 Have gained two years experience in the use of Scientific Equipment.

5.2 Associate member

A person to be elected as an associate member shall, at the time of application or nomination, have a minimum of two years working experience in the use of Scientific Equipment but does not have the minimum qualifications for full membership.

6. Subscriptions

All matter relating to entrance fees and subscriptions shall be in accordance with the attached Schedule A that can be amended from time to time.

7. Cessation of membership

7.1 A member of NUSESA shall cease to be a member if he resigns in writing whereupon membership will cease from the date when such notice was received at the office of NUSESA.

7.2 The Council may withdraw membership of NUSESA from a member:

7.2.1 If the subscription is more than one year in arrears without a good reason.

7.2.2 If a member has been guilt of misconduct which is an opinion of Council, renders him unfit to retain his membership and a resolution to the effect has been passed by a majority of at least three- four of its members of the Council present at a meeting called for that purpose.

7.2.3 If he become of unsound mind.

7.3 Any member who ceases to be a member shall remain liable to pay the amount of his current subscription and any other sums due by him to NUSESA. No refunds will be made to such members of subscriptions already paid.

8. Co-opting of members

8.1 Upon the resignation of a Council member, the remaining Council members may, if they so desire, co-opt any other Association member onto the council after due regard has been paid to the qualifications necessary for a Council Member.

8.2 Upon the resignation of a Branch Committee member, the remaining Committee members may, if they so desire, co-opt any other Association Member onto the Branch Committee after paying due regard to the qualifications necessary for a Committee member.

8.3 The Council or Branch Committee may co-opt onto any special Committee or Standing Committee, any member of NUSESA willing and able to serve in that capacity.

9. The Council

9.1 The management of NUSESA shall be under the control of the Council which shall for all purposes be the Governing body of NUSESA.

9.2 The Council shall consist of:
A President
A Vice-President
A Secretary
A Treasurer

The Chairman of each local branch committee or an alternate nominated by the Branch committee and any co-opted members by Council not exceeding four.

9.3 Members of the Council other than Branch chairman defined above will normally hold office for a period of two years and shall be eligible for re-election.

9.4 Election of members of the Council shall take place in the following manner:

9.4.1 Not later than the first week in June each year, the Council shall cause to be issued to all Members a notice inviting nominations for Council.

9.4.2 Only paid up members may be nominated for election to the Council and all nominations must be signed by the nominee and two Members of NUSESA and must be received by the secretary no late than 21 days before the Annual General Meeting.

9.4.3 At the Annual General Meeting, the Chairman of the meeting shall declare the names of the nominated members candidates. Secret ballot shall be conducted to determine the candidates. In the case of an equality of votes being received, the chairman shall have a casting vote.

9.4.4 A returning officer shall be nominated by Council to preside over the conduction of elections at the Annual General Meeting.

9.5 A member of the Council shall cease to hold office:

9.5.1 If he absents himself from three consecutive meetings of the Council without special leave of absence and the Council thereafter resolve that his place vacated.

9.5.2 If he ceases to be a member of NUSESA

9.5.3 If by notice in writing he resigns his office

9.5.4 If he becomes of unsound mind

9.5.5 If he is requested in writing by all other members of the Council to resign, or

9.5.6 If he is removed from office by a resolution of NUSESA in a Special General Meeting.

9.6 All public meetings of NUSESA held by the Council, committees of the Council or Branches must be controlled by a member of the Council or member of branch committee who shall be the Chairman for that meeting and who shall be specifically charged with the duty of ensuring that the meeting is conducted with due regard to the security requirements of the country.

9.7 The Council shall have power from time to time to set up or dissolve local Branches of NUSESA and other such subsidiary bodies as may prove desirable, to make, alter and repeal any NUSESA bye-laws as it may deem necessary or expedient or convenient for the constitution, and to conduct and control the said local Branches and other subsidiary bodies of NUSESA.

9.8 The Council shall have the power from time to time to make, alter and repeal any NUSESA bye-laws as it may deem necessary, for the proper conduct and management of NUSESA, provided always that no NUSESA bye-laws shall; be inconsistent with or shall affect or repeal anything contained in the constitution of NUSESA.

10. Proceedings of the Council

10.1 The Council shall, as soon as practicable after the Annual General Meeting every year, but in any case not later than six weeks after such a meeting, meet together for the despatch of business or co-opted members to Council. The President shall take the chair at all meetings of the Council and the Executive Committee at which he is present. In the absence of the President, the Vice-President shall preside at such meetings save that, if President and Vice-President are absent, the meeting shall elect a member of the Council as Chairman for that meeting.

10.2 The Council may regulate its meetings as it thinks fit. Questions arising at any meeting shall be decided by a majority of votes of those members attending and in case of equality of votes the Chairman at the meeting shall have a second or casting cote.

10.3 On the request of the President or not less than three members of the Council, the Secretary shall, at any time, summon a meeting of the Council by notice served on the members of the Council.

11. Branches

11.1 The areas covered by the operations of NUSESA shall be divided into such districts as may be defined by the Council from time to time. In respect of each defined district the Council may at any time establish a local Branch.

11.2 Membership of a Branch established in terms of the preceding clause shall consist of:

11.2.1 Those members whose usual place of residence is situated within the defined district concerned, unless the member elect otherwise, and

11.2.2 No Member shall belong or have voting rights in more than one Branch at a time.

11.3 Each Branch shall elect a Branch Committee which shall consist of the following members of the Branch:

A Branch Chairman
A Branch Vice-Chairman
A Secretary/Treasurer and
Not more than four additional members

11.4 Each Branch shall hold an Annual General Meeting not more than 8 weeks nor less than 2 weeks before the Annual General Meeting of NUSESA and the Branch Committee shall be elected at this meeting. All provisions dealing with the election, vacation of office and co-opting of members of the Council of NUSESA shall apply mutatis mutandis to Branch Committees.

11.5 The powers of the Branch shall be those as defined by the Council from time to time.

11.6 The duties of the Branch shall be:

11.6.1 To raise funds for NUSESA

11.6.2 Arrange programs and events to enhance the aims of NUSESA

11.6.3 To maintain a register of members, books of accounts and other Branch records.

11.6.4 Any other duties which the Council may assign to the Branch from time to time.

11.7 A Branch shall be dissolved if:

11.7.1 The Council passes a resolution in favour of such dissolution at a meeting attended by not less than two-thirds of the members of the Council and at least three-fourths of those Council members attending in favour of such a resolution provided such a Branch shall have the right to appeal to a special general meeting if the appeal is lodged within 14 days and pending the hearing of such an appeal the Branch shall not be dissolved or

11.7.2 Two-thirds of the members of the Branch so decide at a meeting of which three weeks' notice has been given.

12. General Meetings

12.1 An Annual General Meeting of NUSESA shall be held once in every financial year in August and audited accounts shall be distributed at this meeting or as soon as possible thereafter.

12.2 The Council shall call a Special General Meeting whenever it thinks fit and Special General Meeting shall also be convened on the written petition of not less than 10 voting members. The requisition shall state the objects of the meeting and shall be signed by the petitionists and forwarded to the Secretary of the Council.

12.3 Twenty-one days' notice specifying the place, the day and the hour of an Annual or Special General Meeting and in the case of special business, the general nature of the business, shall be given to members of NUSESA. Such notice, if served by post, shall be deemed to have been served 5 days after posting, and the accidental non-receipt of such notice shall not invalidate the proceedings at any general meeting.

12.4 All business that is transacted at a Special General Meeting shall be only that for which the Special General Meeting has been called. Due notice must be given of items for inclusion on the agenda of the Annual General Meeting other than the following:

Consideration of the Accounts and Balance Sheet
Reports of the Council

13. Proceedings at General Meetings

13.1 No business shall be transacted at any General Meeting unless a quorum, as provided under Section 14, is present.

13.2 If within half an hour from the time appointed for the holding of a General Meeting a quorum is not present the meeting, if convened on the petition of members, shall be dissolved. In any case it shall stand adjourned to the same day in the next week at the same time and at same place and if at such adjourned meeting a quorum is not present within half an hour from the time appointed for holding the meeting the members present shall be a quorum.

13.3 The President shall preside at every General Meeting, but if there is no President, the Vice-President if present shall preside or, failing him an elected Council member.

13.4 At all General Meetings a resolution put on the vote of the meeting shall be decided on a show of hands by a majority of the members present and entitled to vote unless a ballot be demanded by the Chairman or by at least three members present in person and entitled to vote.

13.5 If a ballot be demanded in manner aforesaid, it shall be taken at a time and place and in a manner as the Chairman shall direct and the result of the ballot shall be deemed to be the resolution of the meeting at which the ballot was demanded. Only members present or represented at the meeting and entitled to vote shall participate in the ballot.

13.6 No ballot shall be demanded on the election of a Chairman of a meeting or on any question of adjournment.

13.7 In the case of an equality of votes, either on a show of hands or at ballot, the Chairman of the meeting shall be entitled to a further or casting vote.

13.8 The demand for a ballot shall not prevent the continuance of a meeting for the transaction of any business other than the question on which the ballot has been demanded.

13.9 A member entitled to vote and unable to be present at any General Meeting may not vote by proxy provided the person appointed as proxy is a voting member of NUSESA in good standing and such appointment shall be duly made in writing.

14. Meeting – General Procedure

14.1. Quorum

Quorum at General Meetings of NUSESA shall be not less than 50% member of NUSESA.

At Council, Branch or Standing Committee meeting the quorum shall be not less than 50%.

15. Finance

15.1 The financial year of NUSESA shall be a period of twelve months commencing on 1st July.

15.2 The income and property of NUSESA, wheresoever derived, shall be solely towards the promotion of the aims of NUSESA, as set forth in the Constitution and no portion shall be paid or transferred directly or indirectly, by way of dividends, bonus, or otherwise howsoever by way of profit, to members of NUSESA, provided tha nothing herein shall prevent the payment in good faith of reasonable and proper remuneration to any member of NUSESA, in return for service actually rendered to NUSESA, not prevent the payment of reasonable interest on money lent by or reasonable and proper rent for premises let by any member to NUSESA.

15.3 The liability of the members is limited to such membership subscription as may be due and unpaid from time to time.

16. Accounts

16.1 The Council shall cause proper and sufficient books of account to be kept in such a manner as to give a true and fair view of the state of NUSESA's affairs and to explain its transactions with respect to:

16.1.1 The assets and liabilities of NUSESA

16.1.2 The sums of money received and expended by NUSESA and the matters in respect of which such receipts and expenditure take place.

16.1.3 All sales and purchases of goods by NUSESA

16.1.4 Any other financial transactions which may be entered into.

16.2 The books of account shall be kept at the office of NUSESA or at such other place as the Council shall think fit, and shall always be open to the inspection of the Council or any member thereof and subject to reasonable restrictions as to the time and manner of inspection, shall be open to inspection by members.

16.3 The annual accounts of NUSESA shall be audited by a qualified auditor.

16.4 At the Annual General Meeting a report of the affairs of NUSESA, together with an audited statement of income and expenditure and balance sheets made up to the end of the financial year shall be submitted.

17. Amendment to Constitution

No addition, alteration or amendment shall be made to this Constitution unless the same shall have been previously submitted to, and approved by two-thirds of the members of NUSESA present and voting in a General Meeting.

18. Dissolution

18.1 NUSESA may be dissolved by resolution of a General Meeting of members of NUSESA in good standing, convened on the recommendation of the Council or on the requisition of not less than half the voting members.

18.2 If upon dissolution of NUSESA, there remains, after satisfaction of all its debts and liabilities, any property whatsoever, the same shall not be paid to or distributed among the members of NUSESA, but shall be given or transferred to some other institution or institutions to be determined by members of NUSESA at or before the time of dissolution.

19. Schedule A

The joining fee shall be Ten Dollars ($10.00) to be paid at the registration of a new member. This amount is reviewed annually by Council. The yearly subscription fee for members shall be Twenty Dollars ($20.00). The yearly subscription fee for associate members shall be Fifteen Dollars ($15.00). These amounts are reviewed annually by Council.

Appendix 2b

The Constitution
March, 1991

1 NAME:

The name of the Association is "Network of Users of Scientific Equipment in Southern Africa, Tanzania Region", (hereinafter called "the Association") and shall be abbreviated as "NUSESA (TANZANIA)".

2 PATRON:

The Patron of the Association shall be the Hon. Minister Prof. Philemon Sarungi (MP), NEC Member.

The Patron shall be the overall advisor of the Association on all matters related to the well being of the Association.

3 REGISTERED OFFICE:

The registered office of the Association shall situate in the offices of the Chairman of NUSESA, c/o Central Science Workshop. P. O. Box 35065, Dar es Salaam, Tanzania.

4 STATUS

The Association shall be a private, non political, non sectarian, and non profit association of users of scientific equipment interested in the promotion, development and proper use of scientific equipment.

5 SCOPE

The Association's interests and activities shall cover all aspects of development, procurement, use and maintenance of scientific equipment.

6 OBJECTIVES AND FUNCTIONS

The objects of the Association shall be to promote, develop and advance knowledge of proper use and maintenance of scientific equipment.

Without prejudice to the generality of the foregoing, the objects of the Association shall be:

a) to provide an appropriate forum for the exchange of views on all issues pertaining to scientific equipment;

b) to encourage research and development; proper use and maintenance of scientific equipment; and to actively seek to improve users knowledge of such equipment and the relevant techniques;

c) to establish and maintain facilities, like data banks for the collection storage and use of information pertaining to scientific equipment;

d) to print, publish, illustrate, translate, sell, lend or otherwise distribute any information relating to the objectives of the association;

e) to encourage training of users of scientific equipment by organizing courses and scholarships within and outside Tanzania;
to co operate or affiliate with institutions in Tanzania, the Southern African Development Co ordination Conference (SADCC) countries or elsewhere in all matters related to scientific equipment for the mutual benefit of such institutions and the Association;

g) to act as a consultative and advisory organ to the government and other non governmental bodies on matters pertaining to scientific equipment;

h) to promote and safeguard interests of users of scientific equipment in the country;

i) to perform any such other activity as may be consistent with the objectives of the Association.

7. MEMBERSHIP

Membership shall be open to all users of scientific equipment. There shall be Corporate members and Non Corporate members.

7.1 Grades of Membership

Corporate Members shall consist of fellows, ordinary and Institutional Members; and the Non Corporate Members of the Association shall consist of Honorary Fellows, Associate Members, Students and Companions.

7.1.1. Ordinary Members

a) Ordinary Membership may be awarded to an applicant who is a scientist, or technician with an approved qualification and who has at least three years experience in the operation and or maintenance of Scientific equipment approved by the Council.

b) Ordinary Membership shall be open to any citizen of Tanzania.

7.1.2 Institutional Members.

a) Institutional Membership shall be granted to recognized Institutions, Societies or Organizations based in Tanzania and which subscribe to some or all of the objectives of NUSESA (TANZANIA) as set out in article 5 hereof.

b) When applying for Institutional Membership, such bodies shall submit to the Council of NUSESA (TANZANIA) copies of their constitutions, latest reports of their activities and their permanent addresses in Tanzania.

c) Upon grant of membership the documents referred to under paragraph 6.1.2 b) above shall be kept by the secretary general and updated from time to time.

7.1.3 Fellows.

Fellowship shall be by election in accordance with the Rules made from time to time by Council, and shall be conferred on members (except students and companions members) who have demonstrated exceptionally high quality work in line with NUSESA (TANZANIA) objectives.

7.1.4 Honorary Fellows.

Honorary Fellowship shall be conferred on any other person elected thereto by Council. Honorary Fellows shall not pay a subscription.

7.1.5 Associate Members.

a) Associate Membership may be granted to an applicant who is a non citizen and who would otherwise have qualified for Ordinary membership.

b) Associate Members shall not be eligible to hold office in the Council. They may however serve in other Committees.

c) Associate Membership shall not exceed a term of 5 years.

7.1.6 Student Members.

a) An applicant may be admitted as a student if he is in full time scientific employment or is attending an approved course leading directly to such qualification as may be accepted for Ordinary membership.

b) Student members shall not be entitled to vote or hold any office in the Association.

c) Student Membership shall not exceed a term of 5 years.

7.1.7 Companion.

An applicant may be admitted as a Companion although not qualifying under the preceding paragraphs of article 6 hereof if he can satisfy Council that he is contributing or has contributed to the promotion of the proper use of scientific equipment.

8. THE REGISTER

A Register (hereinafter referred to as "the Register") shall be kept containing the names of members under each category of membership.

9. APPLICATION FOR MEMBERSHIP.

a) Application for Membership of the Association and renewal thereof shall be on such form as shall be prescribed and supplied by the Secretary General of the Association.

b) Membership will be granted by Council. The Council's decision on matters pertaining to the granting of membership shall be final.

c) When an applicant has been granted membership by Council such applicant will be notified and his name entered in the Register subject to the payment (by such applicant) of the entrance fee and first subscription. Subscription must be paid within one month of the notification aforesaid.

10. SUBSCRIPTION.

There shall be an entrance fee and an annual subscription for each category of Membership except Honorary Fellows.

a) Entrance fee shall be determined by the Council and ratified by a simple majority at the Annual General Meeting of the Association.

b) All annual subscription, except the first subscription of a new member, shall be payable by the first day of July in each year.

10.1 Entrance Fee and Annual Subscription.

10.1.1 Entrance Fee:

Entrance fee for Membership of the Association shall be as follows:
a) Ordinary Members T.Shs. 1,000/=
b) Associate Members T.Shs. 1,000/=
c) Student Members T.Shs. 100/=
d) Companion Members T.Shs. 200/=
e) Institutional Members T.Shs. 20,000/=

10.1.2 Annual Subscription:

Annual subscription payable by member of the Association shall be as follows:
a) Ordinary Members T.Shs. 500/=
b) Associate Members T.Shs. 500/=
c) Student Members T.Shs. 50/=
d) Institutional Members T.Shs. 50,000/=
e) Companion Members T.Shs. 100/=

11. CESSATION OF MEMBERSHIP.

a) Membership may cease upon resignation, loss of residence for a non citizen, expulsion or death.

b) The Council shall have power to expel any member who shall offend against the Constitution and, or, Rules of the Association or whose conduct shall in the opinion of the Council render him/her unfit for membership of the Association.

c) Resignation, expulsion or re admission of members shall be regulated by procedures set out in the Rules made hereunder.

d) Any person shall, upon ceasing to be a member of the Association forfeit all right to and claim upon the Association and its property and funds.

12. THE COUNCIL.

There shall be a Council which, subject to the provision of this Constitution, shall be the supreme governing organ of the Association.

12.1 Membership of the Council

a) Members of Council shall be elected by secret ballot at the Annual General Meeting of the Association. They shall hold office for a term of three years and shall be eligible for re election for a further term of three years.

b) The council shall consist of:
i) A president Chairman.
ii) A vice president Vice Chairman.
iii) Secretary General Member
iv) Treasurer General Member
v) Six others Members

c) There shall be an Executive Committee of the Association which shall inter alia, be composed of the following officials of the Council:
i) The President
ii) The Vice President
iii) Secretary General
iv) Treasurer General
v) One other member of Council.

The Executive Committee shall be responsible to the Council for the day to day activities of the Association.

d) The Council shall set up Sub Committees and confer thereon such powers and duties as council may deem appropriate. Provided that Council shall not delegate to such committees matters pertaining to the general policy and, or, finances of the Association.

e) Council shall have powers to appoint a full time Executive Officer to perform such duties as Council shall from time to time determine.

f) The President may, on his own initiative, or at the request of Council, invite any person to attend any meeting of the Council but such person shall have no right to Vote.

g) If any position in the executive committee falls vacant for any cause whatsoever, the Council shall, as soon as practicable call an Extraordinary General Meeting for the purpose of filling such vacancy by election.

h) Membership of the Council, shall be honorary.

i) No member of the Association shall hold more than one office in the Association simultaneously.

j) Except for the Chairman who shall have both an original and a casting vote, each member of Council shall have only one vote.

k) A member of Council shall cease to hold office if:
i) by notice in writing he resigns his office;
ii) he/she ceases to be a member of the Association;
iii) he/she misses three consecutive meetings of the Council;
iv) he/she in guilty of any conduct which in the opinion of Council is prejudicial to the interests of the Association;

l) Council shall have the power to co opt a member to fill a vacancy in the Council.

12.2 Functions of the Council.

a) The Council shall be responsible for the proper running of the business of the Association.

b) The Council (through the Treasurer General) shall be responsible for the safe keeping of the Association's funds and for this purpose it shall appoint an independent auditor to examine the Association's accounts and finances and submit a written report to the Annual General meeting of the Association.

c) The Council shall keep all the monies of the Association in a bank account with such Bank as the Council may determine.

d) The Council may make Rules generally for giving effect to the objectives and functions of the Association; such Rules shall be tabled before the next Annual General Meeting of the Association. Provided that such Rules shall only become operative upon approval thereof by two thirds of the members present at such meeting. Amendment, or repeal, of the Rules shall be effected in like manner.

12.3 Meetings of the Council.

a) The Council shall meet at least three times a year whereat six (6) members shall constitute a quorum.

b) The Council shall prepare the Agenda for every Annual General Meeting.

c) The President shall at the request of at least half of the Member's of the Council convene special or additional meeting of the council.

d) The President shall be responsible for directing and convening Council meetings and shall be the Chairman thereof. In his absence, the Secretary General shall convene the meetings and the Vice President shall be the Chairman.

e) Voting shall be by a show of hands except when decided otherwise, in which case it shall be by secret ballot.

13. GENERAL MEETINGS

13.1 The Annual General meeting:

a) The Annual General meeting of the Association shall be held in May of each year at such Venue and on such date as shall be determined by Council.

b) At any Annual General meeting, one third of the Members shall constitute a quorum.

c) Each Fellow or Member shall be entitled to one vote on each issue. In the case of an equality of votes the Chairman of the meeting shall have a casting vote.

d) Honorary Fellows, Associate Members, Students and Companions shall not be eligible to vote at General Meetings.

e) Voting at General Meetings shall be by show of hands unless the Chairman of the Meeting directs otherwise.
Two members shall be appointed by the Chairman at the beginning of each Meeting to count votes.

g) The Final Agenda for the Annual General Meeting shall be distributed to all members at least twenty one days prior to such meeting. A preliminary agenda for the Annual General Meeting shall be distributed to the members during the 1st week of February. Corporate Members wishing to submit amendments and, or, additions to the Preliminary Agenda for inclusion in the Final Agenda must submit these to the Secretary General not later than 15th March.

h) Corporate members unable to attend the Annual General Meeting may if they so wish indicate their Vote on any matter in the Final Agenda on special forms which shall be obtained from the Registered Office of the Association upon request and returned to such office seven days before the date of the Meeting.

i) Resolutions at Annual General Meetings shall be passed only in connection with matters set out in the Final Agenda.

j) When any notice of motion appears in the Final Agenda of an Annual General Meeting or Extraordinary General Meeting no amendments other than clerical amendments of the motion shall be moved.

k) Functions of the Annual General Meetings shall be:

i) to receive and consider the Annual Report on the activities of the Association as prepared by the Secretary General;

ii) to elect office bearers;
iii) to elect Fellows and Honorary Fellows of the Association;
iv) to discuss and approve the Association's proposed activities and budget for the coming year;
v) to receive and discuss the Association's audited accounts and auditor's report on such accounts;
vi) to discuss any other matter tabled by members;
vii) subject to the provisions of this Constitution, to perform such other functions as the Chairman of such meeting may deem appropriate.

13.2 Extraordinary General Meetings.

a) An Extraordinary General Meeting shall be requisitioned by at least one third of the Fellows or Members. Such requisition shall be made in writing addressed to the Secretary General and shall give the reason thereof. Such meeting shall be held within two months of the requisition being received by the Secretary General and all members shall be given one month notice in writing of the meeting. At any Extraordinary General Meeting one third of the Members shall constitute a quorum.

b) Copies of all resolutions which it is desired to submit to the Extraordinary General Meeting shall be annexed to the requisition for such meeting. Voting at Extraordinary General Meetings shall be conducted in accordance with the provisions governing voting at the Annual General Meeting.

c) The Chairman may with the consent of members at any meeting at which a quorum is present (and shall if so directed by the meeting) adjourn the meeting from time to time and from place to place but no business shall be transacted at any adjourned meeting other than that left unfin ished from the meeting at which the adjournment took place.

14. FINANCE

a) The funds of the Association shall be derived from membership entrance fees, subscriptions, endowments, consultancies, bequests or grants that might be made by government, organiza tions or individual persons to support the activities of the Association;

b) The funds of the Association may be applied by the Council to meet expenditure incurred in the furtherance of the aims and objectives of the Association as laid down in the By Laws and toward the general management of the Association;

c) Authority to sign cheques to meet such expenditure as shall have been previously approved by Council shall be vested in the Treasurer General and one or two Council members elected annually for that purpose; d) Cheques issued on behalf of the Association must be signed by any two of the three members authorized in that behalf by article 13 (c) hereof.

e) The Financial year of the Association shall commence on the 1st of July and end on the 30th day of June in each year, to which the accounts of the Association shall be balanced.

14.1 Accounts

a) The Council shall cause proper and sufficient books of account to be kept in such manner as to give a true and correct view of the Association's affairs and to explain its transactions with respect to:
i) Assets and liabilities;

ii) Funds received and expended and the matters in respect of which such receipt and expenditure took place;
iii) Sales and purchases of goods;
iv) Any other financial transactions which may have been entered into.

b) The books of account shall be kept at the Registered Office of Association or at such other place as the Council shall deem fit and shall always be open for the inspection of the Council or any member thereof but subject to such restrictions as to the time and manner of inspection as the Council may deem reasonable.

15. AUDITORS

Council shall appoint qualified auditors annually and shall be responsible for the publication of an audited statement of accounts of the Association.

16. MEMBERS ADDRESSES

Every member of the Association shall from time to time communicate to the Secretary General of the Association his address or that of his banker or agent, and all notices posted to such address shall be considered as having been duly given on the 10th day following the date of posting.

17. INTERPRETATION OF THE CONSTITUTION

The Council shall be the sole authority for the interpretation of this Constitution and the Rules made from time to time hereunder; and the decision of the Council upon any question of interpretation or upon any matter affecting the Association and not provided for in this Constitution, or such Rules shall be final and binding on the members.

18. AMENDMENT TO CONSTITUTION

a) This constitution may be added to, repealed or amended at an Annual General Meeting or at an extraordinary General Meeting called for that purpose. Any member, seconded by ten other members, desiring to submit a motion proposing changes in the Constitution, shall give notice of such a motion in writing specifying the changes proposed to the registered office to arrive not later than the 31st day of December. Council shall be empowered to call an Extraordinary General Meeting for the purpose of discussing the members proposal and making alterations to the Constitution. One month notice of the proposed alterations must be given to members.

b) Any resolution to alter the Constitution must be supported by a simple majority.

19. DISSOLUTION

a) The Association may be dissolved by resolution at a General Meeting convened on the recommendation of the Council by a vote of at least two thirds of all members entitled to vote.

b) Should the motion for dissolution be passed a liquidator to be appointed by the Council shall take charge of all the assets of the Association and, subject to the payment of all debts and liabilities, the balance thereof shall be transferred to such other institution or institutions as shall be determined by members at or before the time of such dissolution.

20. AFFILIATION

Any organization with kindred aims and objectives may be affiliated to the Association; the terms of such affiliation shall be decided by the Executive Committee subject to confirmation by the Council.

21. ADOPTION OF CONSTITUTION

This constitution was deliberated upon and adopted by the founder members of the Association at a Meeting held on March 22nd 1991 in Dar Es Salaam as is set out in the record of the meeting appended to this Constitution.

Appendix 3a

Organisational structure of NUSESA

Background

During the first training workshop organised by International Foundation for Science (IFS) in Harare in 1989 it was pointed out the need for more information and improved co-ordination of activities aiming to improve the use of the scientific equipment in the region. There was also need to share experiences within the region and issues related to the equipment problem, and to come up with recommendations to alleviate this problem, tailored to the local/regional situation.

To meet these needs the Network of Users of Scientific Equipment in Eastern and Southern Africa (NUSESA) was initiated.

Aims and Objectives of NUSESA

The broad aim of NUSESA of is to *provide a forum for information and discussion on proper purchase, use, operation and maintenance of scientific equipment* in Eastern and Southern Africa.

Operation of NUSESA

NUSESA is a regional, non-governmental, non-political body whose principal aim is to promote and encourage proper purchase, use, maintenance and repair of scientific equipment.

The Network is based on nationally organised operations. Each country in the region organises itself into a National Network so that the equipment problems can be tackled in a national context.

The network has nodes, which function in co-ordinating activities and facilitate the exchange of information on scientific equipment in the region.

Membership

Membership in NUSESA is open to technicians, researchers, scientists and others with special interest in scientific equipment.

Affiliation

Each National NUSESA is automatically affiliated to the regional NUSESA if during its formation the NUSESA secretariat is involved and the majority members of NUSESA Council of National Representatives (CONARE) agree.

The national NUSESA should nominate one person to be the national representative. The national representatives should meet at least once a year to share experiences and ideas, and to discuss activities. The proceedings of these meetings should be recorded.

The Regional Council shall act as a consultative body to National NUSESAs, donors, IFS and others. The Council will act as the linking body in the region.

Role of International Foundation for Science (IFS)

NUSESA would like to maintain the link with IFS.

IFS will be a co-operating partner with NUSESA by:

- acting as a discussion partner sharing ideas with the aim to improve the situation on the purchase, use, operation and maintenance of scientific equipment in the region where NUSESA operates.

- administering the Spare Parts Fund, if the proposal for such a fund will be approved. Due to difficulties in finding correct suppliers, the currency situations and other obstacles in the Network countries the funds should be kept by IFS in Stockholm. Please see also part 1 page 6 for more information.
- informing scientific bodies, institutions, grantees and advisers engaged in IFS's research programmes about NUSESA. The purpose should be to find links to NUSESA activities.
- providing links to IFS's large net of scientific international contacts to find ways of co-operation with the Network.
- assisting the Network whenever possible in matters requested by the Secretary General or national representatives.

Council of National Representative (CONARE)

1. Supreme body of NUSESA with overall authority on aspects of the functioning of the Network. Approves all policies, activities and budgetary requirements of the entire Network.
2. Membership composition of council shall be all National Representatives. Donors can attend Council meetings no voting rights can attend council meetings at the request of the Secretariat, Council or at their own request.
3. Functions of council:
   i) to appoint the Secretary General for the period of 3 years to run the Secretariat. His/her appointment may be renewable and or on part-time basis.
   i) to determine the mode and mechanism for raising funds and its allocation to Network activities.
   ii) to appoint the Treasurer for the period of 3 years to managed the finances of NUSESA. His/her appointment may be renewable
   iii) to appoint the finance committee members to assist the Treasurer for a period of 2 years.
   iv) to discuss and plan regional activities.
   v) to review activities in the region
   vi) to pass resolutions

Chairperson of Council

1. Shall be chosen among National Representatives on rotational basis each year the Council meets.
2. Shall preside at the yearly Council meetings. In the absence of the chairperson, simple majority from among the quorum members present should choose an acting chairperson.

Role of National Representatives

1. These are elected at the national level.
2. Their functions are:
   i) to promote the objective of the Network at the national level.
   ii) to be in constant contact with other scientific equipment users in the country for the promotion of Network activities.
   iii) to receive and process information from their countries and dispatch to the secretariat and vice versa.
   iv) to implement decisions of the Network at the national level.
   v) to seek funds and collaboration (internally and externally) to support projects at the National level.

vi) to organise in-country training and liase with other National Representatives for matters related to the Network.

The Secretary General

The Secretary General shall hold office for a period of 3 years.

Responsibilities of the Secretary General include:

i) to manage the secretariat and its administration.

ii) to manage the Network towards the attainment of its objectives.

iii) to co-ordinate the regular publication of a Newsletter.

iv) to keep accurate records on all Network matters.

v) to keep in contact with the National Representatives for the promotion of Network activities and dissemination of Network information.

vi) to implement decision of the Network Council and to advise on matters related to the smooth running of the Network.

vii) to ensure equitable distribution of project and identify projects that will have regional implications and promote co-operation between member countries.

viii) to review progress on projects and draw operational plans for new projects.

The Secretary General is at liberty to allocate some of the responsibilities to members of Council.

The Secretariat

The secretariat to be established in the country where the elected Secretary General resides.

The Treasurer

The Treasurer shall hold office for a period of 3 years and shall not be from the same country as the Secretary General.

The Role of the Treasurer

i) keep the NUSESA regional accounts

ii) produce financial reports for the annual regional meeting.

iii) draw up guidelines for the use of funds in NUSESA in the region. These guidelines to include:

- acceptable accounting procedure
- limits of per diems and honoraria given out.
- maximum hotel rates accepted
- others guidelines as the need arises.

Bank Account Signing Powers

Two signatures shall be required for withdrawing funds from NUSESA's main regional account. The people to sign are the Secretary General and the Treasurer.

Appendix 3b

NUSESA Guidelines for collaboration with other networks or organisations

Background of NUSESA

NUSESA is currently active in the following countries:

Botswana, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe

The activities are mostly in universities, colleges and research institutions.

The establishment of NUSESA in each country is done in the "local context' i.e. each country is free to apply rules and procedures which suit them most. Some countries already have a constitution and a membership list, and therefore most activities are supposed to benefit members. In general this is the basis of a National Association that has an executive committee to oversee NUSESA activities and ensure the establishment of a local fund. Other countries have NUSESA representatives or co-ordinators whose task is to seek ways to establish a National NUSESA body in their countries and plan NUSESA type activities.

Organisation of workshops

Workshops are organised by an organising committee which produce in detail the aims and objectives of the workshop and to whom the workshop will be targeted. A detailed budget is also included. This document is then used for fund raising for the workshop or activity with prospective donors.

At the end of the workshop a report is produced which will include recommendations and an accounting for the funds used for the workshop. A copy of the final report is send to the donor or donors. Usually left over funds are left with the National NUSESA for future activities.

Selection of participants

First the national NUSESA nominates or recommends candidates for selection to the organising committee in the case of an international workshop**.** If candidates apply directly to the workshop/ seminar/course they must at the same time apply to the National NUSESA executive committee or national co-ordinator if they are seeking sponsorship through NUSESA. It is to the discretion of the National committee or co-ordinator whether to help the individual seeking funding.

The organising committee does the final selection of participants. Candidates nominated by donors are also screened, but the donors are first of all told what kind of participants will be selected.

Selection of resource persons

The organising committee also does selection of resource persons. Effort is made for the most suitable person for the topic and NUSESA members are preferred. Resource person who are not members of NUSESA are only chosen if they are highly recommended for the subject and on NUSESA terms or negotiated terms.

Funding of activities

NUSESA is encouraged to get sponsorship from any donor willing to fund their activities. International Foundation for Science (IFS) also seeks on behalf of NUSESA funding its activities but these funds are usually limited. NUSESA needs to look for more support for its activities and this exercise is on going through the NUSESA secretariat and the national organs.

Request for funding is usually required at least three months before the activity for national activities unless there is a known allocation in which case the request must be lodged two months in advance. In the case of international workshops the request must be lodged at least six months if an allocation is in place otherwise planning for fund raising must be done at least one year before the workshop.

Per diem and honoraria

Per Diem is paid in the local context and is varied depending on where the course is being held and the organising committee decides this. There is no per diem for localised training workshops but a provision might be made for meals and teas. Local organising committee members are also entitled to per diem or meals so that they can be with the group without straining their home budget.

Honoraria is also left to the National NUSESA but as a guideline for International Workshops the rate is around US $50.00 per session per person. In some cases if a new topic is being tackled a resource person can also be paid for preparation of lecture notes. People requested to assist resource persons are paid, a rate is usually half that of the resource person.

Role of NUSESA secretariat

The role of the secretariat is amongst others is to
– Encourage and co-ordinate regional activities
– Helps new member countries establish their NUSESA.
– Helps organise workshop
– Provide information on activities and funds available
– Establish links with donors within or outside the region
– Co-ordinate with other local or regional activities furthering similar aims and objectives as NUSESA
– Other activities as the Regional Committee may think desirable

Collaboration

In collaborating with NUSESA it must be realised that the membership of NUSESA is wide and encompasses different fields including Agriculture, engineering, medical, etc. The following guidelines for collaboration are provided:

1. Other network or donor can allocate places for NUSESA and request NUSESA for nomination for participants to attend.

2. For those participants who apply directly to a course/activity, they must apply at the same time to their National NUSESA executive or representative for sponsorship. (Please note that NUSESA will NOT support none NUSESA members).

3. For a joint workshop or activity the following applies:
   a) the organising committee should have an equal number of members from each network
   b) NUSESA should be allowed to advertise to its full membership and the workshop need not be confined to participants from one field e.g. medical, agricultural
   c) An equal representation of candidates from each network should be selected.
   d) A joint funding proposal should be produced.
   e) The organising committee must be clear which rules are being applied either NUSESA rules and other network rules although NUSESA can request that some or most of their rules be applied. This is with regard to running the workshop and payments.

4. NUSESA can recommend suitable resource persons but conditions for their participation must be outlined before the workshop commences and they must be given enough time to prepare for the Workshop.

5. Individuals can be invited to organise activities outside NUSESA but they will not be representing NUSESA and their involvement can not be used as collaboration with NUSESA but in their own capacity unless this has been done through the NUSESA secretariat or their national NUSESA in which case the degree of involvement of NUSESA should be discussed before hand.

6. For international workshops NUSESA secretariat should be fully informed of joint activities.

7. No other person unless authorised by the NUSESA Secretariat or the NUSESA National Executive committee or the National co-ordinator or representative shall represent or speak on behalf of NUSESA.

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Note to National NUSESA

This has been produced, as a guideline National NUSESA's are free to add other conditions as they see necessary. Please contact the secretariat with your comments.

Appendix 4a

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145. Mr. Justin Joseph Ringo
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160. Dr. Peter R. Matowo,
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B: Institutional Members

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P. O. KILOSA

165. Zonal Director
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MPWAPWA

166. Director General
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167. Director General
SEAMIC
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168. Chief Chemist
Govt. Chemist.
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169. Director General
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DAR ES SALAAM

170. Director General
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171. Director General
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172. Director General
NRC
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173. Director General
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NOTE: All institutions are government agencies, except those labelled 'Private'

Appendix 4b

List of members NUSESA-Mozambique

No. Name	Institution	Contact
01 Mambire, Manuel	CEIUEM	Tel:475718 Fax:475719
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03 Nhumaio, Claudino	CEIUEM	" " Nhumaio@deel.uem.mz
04 Consolo	CdM-HCM	
05 Sithoi, Luis Filipe	Biochemistry Lab. Fac.Medicine	Tel:424910
06 Mabasso, Marcos	Vet. Lab. Fac. of Veternary	Tel:475183-475155 Marcos@impala.uem.mz
07 Chicala, Salomao	"	Tel:475183-475155
08 Manuel, Wisque	ICSM	Tel:492119 C.P.3617
09 Jambo, Jone Sixpence	INIVE	Tel:475170/1 Fax:475172
10 Duarte,Luis Jorge Gomes	INIVE	Tel:475170/1 Fax:475172 inive@mail.tropical.co.mz
11 Goncalves, Sandra	IPA	Tel:720395 Fax:720396
12 Laita,Ana Paula	"	" "
13 Faftine,Olga	"	" "
14 Cossa, Castigo Babava	LNCQM	Tel:425178
15 Amado, Isabel	LNHAA	Tel:425178
16 Jeronimo, Eduardo	LNHAA	Tel:425178 Fax:426164 angela@lnhaa.uem.mz

NB.:
CEIUEM=Electronics and Instrumentation Center of Mondlane University;

CdM – HCM=Center of Maintenance of Maputo Central Hospital;

Fac.Medicine-Biochemistry = Medicine Faculty of Biochemistry;

Fac. Veterinary = Faculty of Veterinary;

ICSM = Institute of Science and Health of Maputo;

INIVE = National Institute of Investigstion of Veterinary;

IPA = Institute of Animal Production;

LNCQM-MISAU = National Drug Quality Control Laboratory of Ministry of Health;

LNHAA – MISAU = National Food and Water Hygiene Laboratory – Ministry of Health.

Appendix 5

Network of users of scientific equipment in Eastern and Southern Africa, Tanzania region (NUSESA TZ)

Workshop and meeting activities held by NUSESA locally from 1990 to 2000

ACTIVITY	DATES	LOCAL SPONSOR	CONTRIBUTION	INTERNATIONAL SPONSOR
W/Shop on Maintenance and Repair of Scientific Equipment	2/11/90	COSTECH, DSM University -Dar es Salaam	Venue, training equipment and administration.	IFS
Annual General Meeting	22/32/91	DSM University -Dar es Salaam	Venue and services	None
Conference on Scientific Equipment	19/6/92	DSM University -Dar es Salaam	Venue and services	IFS
Annual General Meeting	22/10/93	COSTECH-Dar es Salaam and participating R&D institutions	Venue, services and transportation of participants	None
Annual General Meeting and Fund Raising activity	4/11/94	Sokoine University-Morogoro and participating R&D institutions	Venue, services and transportation of participants	None
Data collection and sensitization program	July-August, 1994	NONE	NONE	IFS
Regional NUSESA Meeting and Introductory IT W/shop.	22/7–2/6/ 1995	COSTECH	Venue and services	IFS
IT Workshop – Advanced Course	24/7-4/8/ 1995	COSTECH	Venue and services	IFS
Annual General Meeting	9/2/96	Agricultural Research Institute-Mpwapwa and participating R&D institutions	Venue, services and transportation of participants	None
Annual General Meeting, Conference on Scientific Equipment	13/9/96	Tanzania Pesticide Research Institute-Arusha, and participating R&D institutions	Venue, services and transportation of participants	None
Annual General Meeting	5/12/97	COSTECH-Dar es Salaam and participating R&D institutions	Venue, services and transportation of participants.	None

ACTIVITY	DATES	LOCAL SPONSOR	CONTRIBUTION	INTERNATIONAL SPONSOR
Annual General Meeting, Workshop training on Perkin Elmer equipment.	13/11/98	Perkin Elmer Company-South Africa, Sokoine University-Morogoro and participating R&D institutions	Venue, transportation of participants and paying resource people.	Perkin Elmer-South Africa
Training of Trainers –W/ Shop on Procurement, Management and Maintenance of Scientific equipment.	July, 1998	COSTECH	Venue and services	SIDA/SAREC
Coastal Zone W/Shop on Procurement, Management and Maintenance of Scientific equipment.	1998	Tanzania Industrial Research Organisation (TIRDO)-Dar es Salaam	Venue, services and teaching equipment	SIDA/SAREC
Morogoro Zone W/Shop on Procurement, Management and Maintenance of Scientific equipment	1998	Sokoine University-Morogoro	Venue, services and teaching equipment	SIDA/SAREC
Mpwapwa Zone W/Shop on Procurement, Management and Maintenance of Scientific equipment	1998	Agricultural research Institute-Mpwapwa	Venue, services and teaching equipment	SIDA/SAREC
Northern Zone W/Shop on Procurement, Management and Maintenance of Scientific equipment	1998	Tanzania Pesticide Research Institute-Arusha	Venue, services and teaching equipment	SIDA/SAREC
Workshop on Internet	1999	TIRDO and participating institutions	Workshop costs	None

ACTIVITY	DATES	LOCAL SPONSOR	CONTRIBUTION	INTERNATIONAL SPONSOR
Southern Zone W/Shop on Procurement, Management and Maintenance of Scientific equipment	1999	Agricultural research Institute-Uyole, Mbeya	Venue, services and teaching equipment	SIDA/SAREC
Annual General Meeting	29/10/99	Agricultural research Institute-Uyole, Mbeya, participating R&D institutions	Venue, services and transportation of participants.	None
Annual General Meeting and a conference on the present and future state of the art of distance learning	8/12/2000	COSTECH, SIMBANET, SEAMIC, Tanzania Open University and participating R&D institutions	Venue, services, resource people and transportation of participants	None

Appendix 6

Summary information on financing NUSESA

YEAR	Paid by Sida SEK	US$	Paid by IFS SEK	US$	Paid by other source US$	Source
1989			1800000	300000		UNFSTD
1990			1200000	200000		WORLD BANK
1991			230000	38000		DANIDA/African network
1992			850000	147000		IDRC
1994	670773	85000				SIDA/IFS
1995	629452	81000				SIDA/IFS
1996	356897	53000	174400	26000		SIDA/IFS
1997	508662	65000	112000	15000		SIDA/IFS/ WORLD BANK
1998	569892	72000				SIDA/IFS
1999	114324	13720	17000	2000	1000	SIDA/IFS/LOCAL
2000			26180	2800	1500	IFS/LOCAL
2001	500000	46000			9000	SIDA/LOCAL

Notes:

1. When comparing take note of the SEK depreciation over the years - SEK has lost value significantly against the US$ as lost against US§
2. Unquantified local input is not reflected in the figures.
3. Local NUSESA activities of localised nature are not included
4. Sida funds from 1994 to 1999 were paid by IFS
5. In 1999 Sida paid NUSESA directly an amount of 50.000 SEK
6. In 2001 Sida paid NUSESA directly an amount of 500.000 SEK

Appendix 7a

NUSESA funding since 1989 – regional activities

ACTIVITY	TYPE OF ACTIVITY	COUNTRY HELD	YEAR	PAID BY SIDA SEK	PAID BY SIDA US$	PAID BY IFS SEK	PAID BY IFS US$	PAID BY OTHER SOURCES US$
1. REGIONAL WORKSHOPS								
		ZAMBIA	2001	141000	12940			
			2000					
			1999					
		ETHIOPIA	1998			70400	9000	SIDA
		ETHIOPIA	1997			150000	20000	SIDA
		ZIMBABWE	1996			100000	15000	18000 SPALNA/ NUSESA
		ZAMBIA	1996			175000	26000	WORLD BANK
		BOTSWANA	1995			110000	15000	
			1994					
			1993					
		MOZAMBIQUE	1992			850000	147000	IDRC
		MALAWI	1991			230000	38000	DANIDA & AFRICAN BIOSCIENCES NETWORK
		TANZANIA	1990			1200000	200000	WORLD BANK
		ZIMBABWE	1989			1800000	300000	UNFSTD
2. CONFERENCES								
		UGANDA	2001					
WFTO CONFERENCE		SOUTH AFRICA	1998			35000	4423	
AFTH SUMMIT		ZIMBABWE	1998			45280	5660	
3. INDIVIDUAL TRAINING								
		TAIWAN	1993					TAIWAN FOR 15 PEOPLE
		LUTON, UK	1994					
		TAIWAN	1994					TAIWAN FOR 12 PEOPLE
		TRIESTE, ITALY	1994					
		NIGERIA/SPALNA	1995			17400	2370	
		SOUTH AFRICA	1995					
		CAMEROON/ SPALNA	1997			120000	15500	
		HUNGARY	1997					
		NIGERIA/SPALNA	1997			40000	5208	
		TAIWAN	1997					TAIWAN FOR 3 PEOPLE
		CAMEROON	1997					2000 NUSESA-ZIM

Appendix 7b

National Activities

ACTIVITY	TYPE OF ACTIVITY	COUNTRY	YEAR	PAID BY SIDA SEK	PAID BY SIDA US$	PAID BY IFS SEK	PAID BY IFS US$	PAID BY OTHER SOURCES US$
	WORKSHOPS	BOTSWANA	2001					LOCAL: 2000
	WORKSHOPS	SOUTH AFRICA	2001					LOCAL: 1500
	WORKSHOPS	SWAZILAND	2001					UNESCO: 5000
	WORKSHOPS	ZIMBABWE	2001					LOCAL: 500
	WORKSHOPS	BOTSWANA	2000					1000
	WORKSHOPS	ZIMBABWE	2000					500
	WORKSHOPS	BOTSWANA	1999					LOCAL: 1000
	WORKSHOPS	ERITREA	1999	64324	7600	18000	2200 *	
	WORKSHOPS	ETHIOPIA	1999			2100	260 *	
	WORKSHOPS	MOZAMBIQUE	1999			14250	1735 *	
	WORKSHOPS	TANZANIA	1999			19500	2674 *	
	WORKSHOPS	ZIMBABWE	1999			6500	800 *	
				* 1998 SIDA ALLOCATION				
	WORKSHOPS	SWAZILAND	1998			86000	10000	
	TRAINING	ERITREA	1998	569892	72000			
	WORKSHOP	ETHIOPIA	1998					
	WORKSHOPS	TANZANIA	1998					
	WORKSHOPS	ZIMBABWE	1998					
	WORKSHOP	SOUTH AFRICA	1997			116000	15000	
	WORKSHOP	ERITREA	1997	508662	65000			
	WORKSHOP	ETHIOPIA	1997					
	WORKSHOPS	TANZANIA	1997					
	WORKSHOPS	ZIMBABWE	1997					
	WORKSHOP	ERITREA	1996	356897	53000			
	NUSESA-ET	ETHIOPIA	1996					
	WORKSHOP	TANZANIA	1996					
	SECRETARIAT	ZIMBABWE	1996					
	WORKSHOP	ERITREA	1995	629452	81000			
	TRAINING	MOZAMBIQUE	1995					
	WORKSHOP	TANZANIA	1995					
	WORKSHOPS	ZIMBABWE	1995					
	WORKSHOP	ERITREA	1994	670773	85000			
	TRAINING	MOZAMBIQUE	1994					
	VISITS	TANZANIA	1994					
	WORKSHOPS	ZIMBABWE	1994			35000	4500	
							COMMONWEALTH SCIENCE COUNC.	
			1993					
		TANZANIA	1992					5542
			1992					REGIONAL WORKSHOP
			1991					REGIONAL WORKSHOP
			1990					REGIONAL WORKSHOP

Appendix 8

Funding of common activities through the secretariat

YEAR	PAID BY SIDA SEK	PAID BY SIDA US$	PAID BY IFS SEK	PAID BY IFS US$	PAID BY OTHER SOURCES
1. Office expenses (communication & secretarial)					
2001		18800	1720		
2000				9710	1000
1999		2130	250	16680	2000
1998				55000	7000
1997				49000	6280
1996				57740	8725
2. Publicity (newsletters/bulletins/website)					
2001		37600	3450		
2000					
1999		3970	470		
1998				23000	2940
1997					
1996					
3. Coordination (visits/follow u)					
2001		61100	5610		
2000				16470	1800
1999					
1998				16000	2116
1997				21450	5756
1996					
4. Annual general meetings					
2001 UGANDA		169200	15530		
2000					
1999 BOTSWANA		43900	5260		
1998 SWAZILAND				185000	22900
1997 ETHIOPIA				145710	19300
1996 BOTSWANA					
1995					
1994 MOZAMBIQUE	PART OF REGIONAL WORKSHOP				
1993					
1992 MOZAMBIQUE	PART OF REGIONAL WORKSHOP				
1991 MALAWI	PART OF REGIONAL WORKSHOP				
1990 TANZANIA	PART OF REGIONAL WORKSHOP				
5. Regional projects					
2001	DATA BASES	70500	6470		

Appendix 9a

ETHIOPIA
Establishing an Ethiopian chapter of the network of users of scientific equipment in Eastern and Southern Africa (NUSESA)

Objectives:
To provide a forum for information and discussion on the proper purchase, use, operation, maintenance and repair of scientific equipment.

Location: Addis Ababa University (AAU)
Membership: Open to IFS and SAREC grantees and other researchers and certified technicians engaged in research in Ethiopia.
Affiliation: NUSESA-Et shall be affiliated to the Regional (NUSESA.
NUSESA-ET's Role: The Network operates based on the general guidelines of the Regional

NUSESA and focuses in particular on:
- Taking a leading role in sensitising policy makers on the significance of scientific research equipment and trained personnel for operating, maintaining and repairing them.
- Establishing a database on scientific equipment and technical personnel resources.
- Organising training workshops/short courses for senior and junior researchers and technicians on use, servicing and maintenance of equipment.

The NUSESA-ET Branch: Shall exercise overall authority on all aspects of the Network's function and be managed by a Co-ordinator who shall be the National Representative of NUSESA-ET.

The Co-ordinator shall:
- Manage the affairs of NUSESA-Et and keep accurate records on all network activities.
- Implement the decisions of NUSESA and promote the objectives of the Network at the national level.
- Seek funds and collaborative support, locally and internationally, to the growth and development of the Network at the national level and
- Organise training workshops and liase with other national representatives for the benefit of NUSESA-ET

Finance:
NUSESA-ET will need financial support to enable it to implement its objectives and to cover, in particular, costs for:

- Conduct inventory of available instruments in various institutions where SAREC and IFS grantees and other researchers as well as certified technicians work such as Addis Ababa University, Awassa College of Agriculture, Alemaya University of Agriculture and Debrezeit Faculty of Veterinary Medicine.
- Conducting training workshops at least twice a year for instrument technicians.
- Disseminating information through publication of brochures newsletters, etc.
- Co-ordination work by NUSESA-Et Office.

Program for 1996–97:

- Inventory of major scientific equipment in the biological and chemical sciences in selected institutions in Ethiopia.
- Registering researchers and technicians engaged in operations and maintenance.
- Establishment of NUSESA-Et
- Sending participant(s) to NUSESA workshop in Zambia in Nov. 1996
- Organising three training workshops in Ethiopia on maintenance of equipment
- Strengthening the instrument maintenance unit of the African Laboratory for Natural Products (ALNAP) where most of the training of NUSESA will take place.

by Ermias Dagne,

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COUNTRY REPORT
by Azeb Yigezu

We have a lot of instruments in our laboratories, which are electronic and non-electronics.

Name of instrument available in the laboratories listed below:
Potentia-status , Galvanastat, Polarograph, Home made 4 electrod potentiastat, X-Y recorders, BAS electrochemical analyser, Function generators, Oscilloscopes, computers, pH meters – digital and analogue, Conductometer, Balances, Battery chargers, Centrifuges, Furnaces, NMR & GC

Status of instruments
They are in good condition.

Suppliers
Different companies – in Germany, USA, UK, Switzerland, etc.

Maintenance records
There is a job card and there is a report every six months about the instruments.

Performance and problems experienced
Service manuals, Power stabilisers

Availability of spares
The department has electronic workshop equipped with electronics parts, which are purchased from local and international markets.

Service and problems related to repair of equipment
Service is given from time to time.

Action plan

- Building of many home made instruments like digital pH meters, constant current source, etc.
- Organising the electronics workshop widely and for the coming near future we are going to establish Nusesa in Ethiopia.

Appendix 9b

ZIMBABWE
Report on the activities of NUSESA in Zimbabwe

Organisation:
NUSESA in Zimbabwe is run by an executive committee based in Harare and a subcommittee in Bulawayo. The sub committee in Bulawayo plans its activities and passes them to the Harare committee for support. In Harare a regional NUSESA office has been set up and we hope to serve the region with the enthusiasm and diligence this organisation demands.

Membership:
We have about forty paid up members and our membership is still growing due to the way people are being involved in workshops and short courses.

Equipment:
Our largest institution of higher learning the University of Zimbabwe essentially has most of the sophisticated equipment like XRF, Electron microscope, XRD, NMR, FTIR, UV/VIS spectrophotometers, GC, GC-MS. Some of the equipment is fairly new and workshops were being planned for familiarising people with the various aspects of the instruments. The only area that may need equipment is in the metallurgy field. For UZ the main problem now is maintenance. Hence the vision for a maintenance centre.

The newly established National University of Science and Technology is in the process of buying equipment. Hence a workshop on procurement of equipment was considered appropriate at an early stage. Two departments in the faculty of Applied Sciences supplied the following information:

The Applied Biology and Biochemistry department has two major instruments a GC Varian make and a UV spectrophotometer Hewlett Packard both bought through their agencies in SA.

The Applied Chemistry department also has two major instruments an AA Varian model and a UV/VIS spectrophotometer Perkin Elmer also bought through SA. For backup both departments were referred to the Harare agencies of the respective companies they bought from. Presently all NUST equipment is new so no maintenance problems have been encountered yet, the main problem faced at NUST is lack of funds to purchase all the equipment required to effectively run a technological university and money to further train its staff to enable it to move with new technology. The feeling of most technical staff is that NUST is going to introduce many new courses for which they will not be prepared. That makes it imperative that they get further training. Indeed one of our technicians went to UK to do a Masters in Biotechnology. Two of our computer software technicians are studying computer hardware, NUSESA sponsored.

Planned Workshops:
Following the successful workshops on Safety and Maintenance, on Procurement, on Instrumentation, and on Computers it is now planned to hold the following four workshops in the near future.

- **Networking.** Since information technology is becoming more and more complex while it simplifies communications we feel that we can best assist each other if we can communicate effectively. So it is our intention to fill the gap in this need.

- **Microprocessor interfacing and datalogging.** This should enable people to use existing software to work out their experimental data.
- **AutoCAD.** As this software is becoming increasingly available it is prudent that we equip ourselves with the ability to use it. We hope to marry innovation and the experience people are getting from workshops like this one so that we end of designing and building our own components or instruments.
- **Glass blowing.** Glass apparatus is becoming extremely expensive and if items can be repaired this will see organisation using their funds for other things.

The resource persons for the above workshops have been identified and what is left is o finalise on the dates and programmes.

NUSESA-ZIMBABWE

By D Mzengeza

NUSESA-ZW has been going on for the past four years. It objectives are:

To provide a forum for information and discussion on the proper purchase, use, operation, maintenance and repair of scientific equipment.

Location: Based at the University of Zimbabwe, has branches at the National University of Science and Technology in Bulawayo and other research institutions in the country.

Membership: Membership is open to all researchers, technicians, IFS and SAREC grantees and those who use scientific equipment. To join the current joint fee is ZWD $20 and the subscription fee is ZWD $30 per annum. The membership at present is 100.

Activities: NUSESA has run several activities during the past four years.

Training:

- 12 people were sent to Taiwan for training on equipment maintenance over a period of 3 years. The work shop was for 2 months.
- One person was sent to Hungary for training of laboratory management.
- 2 people were sent to Nigeria for training on Equipment maintenance.
- One person was sent to each of these countries to attend workshops Malawi and Tanzania.
- Two people were sent to Drugs Council of Zimbabwe for training on HPLC.

The following workshops were held:

- Health and Safety
- Procurement and Purchasing of Equipment
- Animal Safety
- Equipment Maintenance and Fabrication of pH and calorimeter in con-junction with SPALNA

Spares Fund:

Several departments within them university have been able to benefit from the spares fund.

Planned Role for the future:

- Take a leading role in sensitising policy makers on the significance of scientific research equipment and trained personnel for operating, maintaining and repair the equipment.
- Establish a database on scientific equipment and technical personnel resources.

- Organising training workshops and short course for researchers, and technicians on proper use, servicing and maintenance of scientific equipment.

Activities at hand:

- Internet appreciate seminar.
- Computer courses.
- Instrumentation workshop, Chemistry Dept.
- Help with establishment of the Instrument Service Centre at the UZ.

Since the funds are limited the executive committee has given the following guidelines for people seeking funding through NUSESA.

- For short courses NUSESA will consider applications of paid up members. The applicant should submit CV, letter of support from the institution and would undertake to be a resource person for a course on the subject. Where applications have to submitted to IFS they should be handed in at least two months before date of the course.
- Departments seeking funding for spares should have either an IFS grantee or a NUSESA member who uses the equipment.

Recently at a Regional Meeting held in Botswana Mr D. Mzengeza was appointed the first Secretary General of NUSESA for a period of 3 years. At the meeting several countries where adopted which included Ethiopia, South Africa, Lesotho and Swaziland.

Because of his appointment as Secretary General of NUSESA Mr Mzengeza stepped down as National chairman. Mr Samuel Chimsoro was elected as the acting chairman until the next AGM. Mr Samuel Kundishora was elected acting secretary. Mr Israel Njagu is the treasurer.

Those interested in joining and learning more about NUSESA-ZW should contact any one of the following people:

Mr S Chimsoro, Dept. of Applied Biology and Biochemistry
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Contact Person :
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Department of Applied Biology and Biochemistry
National University of Science and Technology
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Zimbabwe

Appendix 9c

Mozambique

Mozambique was involved from the start and several workshops have taken place in Mozambique. Even though there is a language problems many Mozambicans are having to learn English so that they can take part in the activities in the regional.

Further information on NUSESA Mozambique please contact:
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Eduardo Mondlane University Faculty of Medicine
Department of Biochemistry
by Seigo Chibute

The Department of Biochemistry laboratory is intended for lessons to medical students and research. The staff of the department is composed of:

- 3 medical doctors
- 1 biochemist
- 4 technicians
- 2 cleaners

Due to the obsolescence of the equipment and serious plumbing and wiring problems since August 1995 the laboratory has not been running any job. The equipment we used until then was bought before Independence (1975) and some was donated by a East German University With the fall of the Berlin wall the co-operation also fell and problems have worsened to the present situation.

In order to reduce this problem last year the Department established a link with the Department of Biochemistry of the University of Lisbon and as the result of this link we received new equipment which include:

- 1 water bath
- 1 UV/VIS spectrophotometer1 biochemist
- 1 set for electrofoses
- 1 Oven
- 2 balances
- 1 deioniser
- 1 pH meter

But because the rehabilitation of the building has not done yet, these apparatus are not set up. It is expected that the work start in February this year and finish in June.

The reasons for having almost all the equipment out of action in our opinion is not only the age of the equipment but also the lack of preventive basic maintenance has shorten the equipment life time. The centre of electronics of the University is responsible for periodical maintenance and repairing of the equipment. They do their work but this is not enough to improve the life of the equipment, because most of it need a daily check up and/or calibration and this is not done properly in our laboratory because there is no instrument technician.

Other problems we face are the lack of instruction manuals for some given apparatus, and the availability of spare parts. When a new equipment is acquired there is no demonstration of the equipment by manufacturers representatives.

Laboratory of Microbiology

by Josefa Melo

The Laboratory of Microbiology of the Faculty of Medicine in Maputo, Mozambique, was always defined as a service to support teaching, however some work is carried out for other institutions e.g. the Ministry of Health, and the Central Hospital

It is a reference for the diagnosis of infectious diseases in the extent of microbiological diagnosis in support of national programs in control of endemic and epidemics – mainly is the national reference laboratory on STD's.

This lab is useful in training of technicians in the diagnosis of STD's, in evaluation of the technical performance of the technicians of Maputo province; it runs the external quality control with Maputo province and also with WHO reference laboratory in Belgium. We periodically supervise the lab technicians of the provinces.

The laboratory has:

- 2 old incubators, 3 new and 1 CO2 incubator
- 1 old centrifuge
- 1 Elisa manual washing set - new
- 1 Elisa reader - new
- 1 Fluorescence microscope (Zeiss) - new
- 3 old fridges
- 2 deep freezers - 70oc and 20oc
- 5 microscopes (binocular) old
- 1 old autoclave
- 1 old water bath

The National Control Program for STD - AIDS - EC and now French co-operation is supporting in training and buying of some equipment. In the future Italian co-operation will help in the area of diarrhoea diseases.

The equipment is maintained by the electronically centre of the UEM and Ministry of Health technical maintenance centre.

Performance and other problems experienced:

- shortage of equipment
- local equipment maintenance is very expensive
- shortage of spare parts locally

Spare parts are not available in the country. We order them from South Africa.

To repair equipment is quite expensive and for some equipment we have to send them to South Africa, for repairing. It takes a long time to get them back.

Personnel working in the laboratory:

- 2 medical doctors
- 1 biologist
- 4 technicians (medium level)
- 3 technicians (lower level)
- 3 attendants

Ministry of health – Lnhaa, Mozambique
Food and water laboratory equipment report
by Mr Eduardo C Jeronimo

The National Food and Water Hygiene laboratory equipment are divided by different sectors as follows:

- Microbiology Sector
- Water Sector
- Chemical Sector
- Provincial Laboratories in the country (09)

Some of the equipment is old, their operating modes are difficult, and therefore they need frequent maintenance to avoid problems.

The equipment status and condition are quite good because the maintenance sector repairs and does preventive maintenance.

Our equipment are supplied by the following companies:

- Varian (GC 3400, GC 3700, GC 2700, GC 2400, 5000 HPLC, Atomic Absorption, and DMS - 80 Spectrophotometer).
- Beckman (DU-6 Spectrophotometer, pH meter 3400).
- Atago Polax (polarimenter)
- Hach (Spectrophotometer model: DR 2000)
- Mettler (Balances Model: AE160, H-35, H-52, PC 4000, E 2000)
- Buchi (Water stills, Rotary vapor, Digestors, Double water still, Point Fusion meter, Rotary vapor Thermostat Bath)
- WTW (pH meter model pH 96; OXI 92)
- SCHOTT GREATE model CG 819)

The maintenance sector, prepares one month's plan of activities. The plan include contacts with different suppliers by fax or other mail and arrange for the preventive maintenance to take place.

We introduced preventive maintenance, which takes about two or three weeks for each sector, and we rotate the sectors.

The maintenance sector identifies the problem in the equipment, then sends information to the nearest supplier, asking for a proforma invoice

With the pH meter, the Electrode's life are limited and we have no spare electrodes in stock.

In relation to the Bausch and Lomb Spectrophotometer, model 21 for example, the problem is with the Detector, which is replaceable but we have no way to import it.

The Maintenance Sector also look after the provincial laboratories. During the year, we travel once to each laboratory, to resolve some problems and do preventive maintenance.

We also inform the users how to use the equipment properly.

If they have problems with the apparatus, the provincial laboratories usually send it to the National Food and Water Hygiene laboratory in Maputo or ask for information.

Spare parts are a problem, we have difficulties in their procurement and lack of financial resources to buy.

For example, now we need some spare parts for different balances, a detector for Bausch and Lomb spectrophotometer, Condenser glasses for Rotary vapour, level control tubes for water still, Column for HPLC, Electrodes for pH meters, Heater elements for water still a water double still, Lamps for microscopes, heater elements for Autoclaves, plastic cover for each apparatus etc.

We think we should work to:

- Buy spare parts;
- Gradually replace the old apparatus buying some each six month or each year.

But this item needs help from some organisations.

Appendix 10

Terms of Reference
Evaluation of the NUSESA Network

1 Background

During 1993–1998, Sida/SAREC assisted the International Foundation for Science (IFS) in Stockholm with funds for support of a regional programme on purchase and maintenance of scientific equipment. The programme was started in Mozambique, Ethiopia and Eritrea. It was successively expanded to other Eastern and Southern African countries and thus developed to a network. The activities, including workshops and seminars, were led and co-ordinated by IFS. In 1996, the members of the network, now called NUSESA (Network of Users of Scientific Equipment in Southern and Eastern Africa), decided to establish the headquarters in Harare, Zimbabwe. This office replaced IFS as the co-ordinating and administrative focus of NUSESA. The activities are planned by NUSESA Council and implemented under the leadership of the elected Secretary General.

The objective of NUSESA is to strengthen the national and regional capacities and capabilities in proper procurement, purchase, use, repair and maintenance of scientific equipment in universities, research and other educational institutions in the Eastern and Southern Africa. This is carried out mainly by "training the trainers" in workshops arranged in different member countries. NUSESA also publishes a Newsletter and advertises its activities on website www.nusesa.org.

2 Purpose and Scope of the Study

The purpose of this study is to provide Sida/SAREC with an evaluation of the organisation, structure and leadership function of NUSESA, the network's activities, mode of work and impact on the strengthening of capacities in procurement, purchase, use, repair and maintenance of scientific equipment in the member countries. The study should especially focus on universities.

The recommendations from the assessment will form input into Sida's decision of possible future support to NUSESA.

3 Assessment

The assessment shall address the following aspects, issues and questions:

- Describe the organisation and the responsibilities of the leaders of NUSESA. Describe the function of the network, the type of operations and activities carried out. What courses and workshops have been arranged by NUSESA since the beginning of its activities, the number of participants in these activities and particularly participants from the universities. What is the category of those participants; technicians, lecturers, researcher, etc? Have the participants in their turn trained other staff members at their home universities?
- Describe the NUSESA links with the universities in the member countries and assess the function of the contacts. Is there any formally established links, e.g. a co-ordinating unit, at the universities in charge of contacts with NUSESA?
- Analyse the demand of training in NUSESA's subjects at the following universities in the NUSESA member countries: University of Zimbabwe, Universidade Eduardo Mondlane, University of Dar es Salaam and Asmara University.

- Analyse the mode and type of training offered by NUSESA and its relevance to efficiently reducing the problems regarding maintenance of scientific equipment at universities. Are all the present types of activities (courses, workshops, newsletters and data bases) essential for achieving the goals of NUSESA?
- Analyse the impact of NUSESA's activities at the member universities. Could formal links with universities in member countries facilitate and strengthen the impact?
- Describe the financing of NUSESA and estimate the cost-effectiveness. Assess the appropriateness of the design/organisation of NUSESA with regard to financial and organisational sustainability. In view of the present situation, what are perspectives of making NUSESA sustainable? How could it become independent from external donor support within a period of the next 1–3 years?

4 Recommendations by the Consultant

In light of the findings of the study, the Consultant should make recommendations for the following:

- In general, how could the skills for purchase, use, maintenance and repair of scientific equipment be strengthened at the universities in the most efficient way? How could the impact of NUSESA's activites be strengthened, especially at the universities?
- What strategies are recommendable in order to secure a sustainable network? What type of support is needed in order to create a sustainable basis for the continued activities of NUSESA? Could conditions for a more sustainable operation be created/achieved by another type of arrangement, for instance, by formally linking the network with a recognised regional organisation? How could Panafrican organisations and/or networks contribute to consolidating NUSESA?
- In general, how should external resources (from Sida) be addressed in order to facilitate and promote in the most efficient and effective way the maintenance and repair of scientific equipment at universities in Southern and Eastern Africa. Should the resources be addressed to universities/faculties of engineering rather than to NUSESA?
- Sida/SAREC is presently planning to strengthen the support for development of applied research at the faculties of engineering in some Eastern and Southern African universities. Support for promoting skills in purchase, use maintenance and repair of scientific equipment could be incorporated in this future programme? What kind of activities could give the most beneficial impact at universities, separately from NUSESA and as a complement to the NUSESA activities?

The Consultant is free to add and comment upon issues of relevance to the assessment apart from what has been described in these Terms of Reference.

5 Methodology and time table

In order to perform the study the Consultant shall:

- Review of relevant written documentation and the proposal for the continued programme submitted to Sida/SAREC in 2000,
- Visit IFS in Stockholm,
- Visit relevant faculties/departments (Faculties of Science, Faculties of Engineering and other relevant faculties/departments) and maintenance workshops at the following universities: University of Zimbabwe in Harare, Zimbabwe, Eduardo Mondlane University in Maputo, Mozambique, University of Dar es Salaam in Dar es Salaam, Tanzania and Asmara University in Asmara, Eritrea. Interview relevant people for the study and review documents, publications and reports provided by them or acquired from other relevant sources.

- The Consultant shall discuss findings and tentative conclusions with the representatives of the visited institutions before leaving them.

Sida shall brief the Consultant. It is expected that the Consultant will use a total of 5weeks for the study. The Consultant shall make her own travel arrangements.

6 Reporting

The report shall be written in English. It should comprise not less than

20 and not more than 30 single spaced pages, excluding annexes. Format and outline of the report shall follow the guidelines in *Sida Evaluation Report – Standardised Format* (see annex 1).

The draft report shall be submitted to Sida/SAREC no later than October 15, 2001. Within three weeks after receiving Sida's comments on the draft report, the final version shall be delivered on paper as well as diskette (compatible with Word 6.1 for Windows). The report should be presented in a way that enables publication without further editing. The report should begin with the Executive Summary and close with a section of Conclusions and Recommendations.

7 Remuneration and travel costs

These are set out in the accompanying Contract.

Enclosures:
Annex 1. Sida Evaluation Report – Standardised Format

Appendix 11

People I met in Africa

In Harare:

1. Dr T Zengeni
Dean of Science
University of Zimbabwe

2. Dr B Masola
Chairman
Dept. of Biochemistry
University of Zimbabwe

3. Mr L Makore
Chief Technician
Dept. of Biochemistry
University of Zimbabwe

4. Prof L Nyagura
Pro Vice-Chancellor
University of Zimbabwe

5. Dr P Mebe
Chairman
Chemistry Dept.
University of Zimbabwe

6. Mr I Njagu
Senior Chief Technician
Chemistry Dept.
University of Zimbabwe

7. Mr S Museka
Chief Technician
Dept. of Metallurgical Engineering
University of Zimbabwe

8. Dr M Mujaji
Chairman
Dept. of Physics
University of Zimbabwe

9. Mr S Mujumi
Chief Technician
Faculty of Science Mechanical workshop
University of Zimbabwe

10. Prof K Giller
Dept. of Soil Science and Agricultural Engineering
University of Zimbabwe

11. Mr T Tendayi
Chief Technician
University of Zimbabwe

12. Mrs M Mhonda
Senior Technician
Dept. of Clinical Pharmacology
University of Zimbabwe

13. Mrs Y Takure
Senior Technician
Teaching Laboratories, Faculty of Medicine
University of Zimbabwe

14. Dr E Igumbor
Lecturer
Dept. of Medical Microbiology
University of Zimbabwe

15. Ms C Berejena
Chief Technologist
Dept. of Medical Microbiology
University of Zimbabwe

16. Ms D Maranda
Lab Technician
Dept. of Surgery
University of Zimbabwe

17. Dr L Olumekor
Lecturer
Dept. of Physics
University of Zimbabwe

18. Mr S Chimsoro
Chairman NUSESA Zimbabwe
NUST
Bulawayo

19. Mr D Maguze
Chief Technician
Department of Geology
University of Zimbabwe

20. Mr K Musiwa
Senior Technician
Department of Geology
University of Zimbabwe

21. Dzengo Mzengeza
Secretary General NUSESA
University of Zimbabwe

In Dar Es Salaam:

1. Dean, Faculty of Science-Prof. R. T. Kivaisi
University of Dar es Salaam
P. O. Box 35065, Dar es Salaam

2. Head, Physics Department-Dr. C. B. S. Uiso
University of Dar es Salaam
P. O. Box 35063, Dar es Salaam

3. Dean, Faculty of Engineering-Prof B. L. M. Mwamila
University of Dar es Salaam
P. O. Box 35091 Dar es Salaam

4. Director General: Prof. Y.M. Kohi
The Tanzania Commission for Science and Technology (COSTECH)
P. O. Dar es Salaam

5. Director: Dr P. A. Mkonyi
Animal Deseases Research Institute(ADRI)-Temeke
P. O.Dar es Salaam

6. Director General: Dr A.P. Nanyaro
The Tanzania Industrial Research and Development Organisation
(TIRDO)
P. O. Box 23235, Dar es Salaam

7. Manager - Dr R. Kainkwa
Central Science Workshop
P. O. Box 35063, Dar es Salaam

8. Dr. Edward Mhamilawa,- NUSESA Member
Chairman NUSESA,and Secretary General of NUSESA-Tanzania
P. O. Box 35063, Dar es Salaam

9. Mr. Mathias M Lung´wecha - NUSESA Member
President of NUSESA Tanzania
Sokoine University of Agriculture
P. O. Box 30054, Morogoro

10. Mr. Thomas M. Mnunguli - NUSESA Member
Treasurer General of NUSESA Tanzania
Tanzania Bureau of StandardsP. O. Dar es Salaam

11. Mr. Daniel Makundi- NUSESA Member
Zone Coordinator, Coastal Zone for NUSESA Tanzania
Tanzania Industrial Research and Development Organisatio
P. O. Box 23235, Dar es Salaam

12.Mr Enock Yonazi,- NUSESA Member
Principal Scientific Officer of COSTECH
The Tanzania Commission for Science and Technology
(COSTECH)
P. O. Dar es Salaam

13. Dr Nerey H. Mvungi
Department of Electrical Engineering
University of Dar es Salaam
P. O. Box 35091, Dar es Salaam

14.Mr Gerson J Magehema- NUSESA Member
Mettler Toledo
P. O. Dar es Salaam

15 Ms Mary Lyangaro - NUSESA Member
Laboratory Technician
Animal Diseases Research Institute- Temeke
P. O. Dar es Salaam

16 Ms Betty Wangwe - - NUSESA Member
Senior Livestock Field officer
Animal Diseases Research Institute- Temeke
P. O. Dar es Salaam

17 Ms Beatrice Minja— NUSESA Member
Laboratory Technician II
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18 Ms Mary Kitinya— NUSESA Member
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Animal Diseases Research Institute- Temeke
P. O. Dar es Salaam

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P. O. Box 35063, Dar es Salaam

26.Mr Ramadhani Baruti_ NUSESA Member
Central Science Workshop
University of Dar es Salaam
P. O. Box 35065, Dar es Salaam

27.Mr Harry Mwakilima- NUSESA Member
Central Science Workshop
University of Dar es Salaam
P. O. Box 35065, Dar es Salaam

28.Mr Lameck- NUSESA Member
Central Science Workshop
University of Dar es Salaam
P. O. Box 35065, Dar es Salaam

29. Miss Corretha Ngwando
analytical chemist
Animal Diseases Research Institute- Temeke
P. O. Dar es Salaam

30. Mr Andrew Luwago
bacteorology
Animal Diseases Research Institute- Temeke
P. O. Dar es Salaam

31.Dr Ismail Makundi
Department of Physics
University of Dar es Salaam
P. O. Box 35065, Dar es Salaam

In Maputo:

1. Mr Eduardo Jeronimo
Ministry of Health, Maputo
General Secretary - NUSESA, Mozambique

2. Mr. Marcos Mabasso
Veterinary Laboratory
Veterinary faculty
University Eduardo Mondlane

3. Dean Luis Nevs (PhD in veterinary science)
Veterinary faculty
University Eduardo Mondlane

4. Mr. Joao J. Nhambessa (Licenciate in electronics)
HCM - Maintenance
University Eduardo Mondlane

5. Deputy Director Mr. Silvstre B. Nhachengo
(Lincentiate in organic chemistry)
LNHAA
University Eduardo Mondlane

6. Dr. Sergio Chibute (PhD in biochemistry)
Faculty of medicine
University Eduardo Mondlane

7. Professor Rogerio Uthui
Faculty of science
University Eduardo Mondlane

In Asmara:
1. Dr. Tesfamichael Haile
General Secretary-NUSESA Eritrea
Department of Chemistry
University of Asmara

2. Dr. Director Tewelde Zerom
University of Asmara

3. Dr. Beraki Woldehaimanot
Dean College of Science
University of Asmara

4. Dr. Mengisteab Manna
Dean College of Engineering
University of Asmara

5. Mr Mussie Dawit
Computer Science
University of Asmara

6. Ms. Yordanos Ghebreselassie
Computer Science
University of Asmara

7. Mr. Biniam Ghebremichael,
Computer Science
University of Asmara

8. Mr. Tewodros Tekeste
Civil Engineering
University of Asmara

9. Mr. Mequanint Ablel
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University of Asmara

10 Mr. Teclemariam G/Dngl
Mechanical Engineering
University of Asmara

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