



UNIVERSIDADE EDUARDO MONDLANE
 FACULDADE DE CIÊNCIAS
 DEPARTAMENTO DE FÍSICA



EASTERN AND SOUTHERN
 AFRICAN MANAGEMENT
 INSTITUTE (ESAMI)

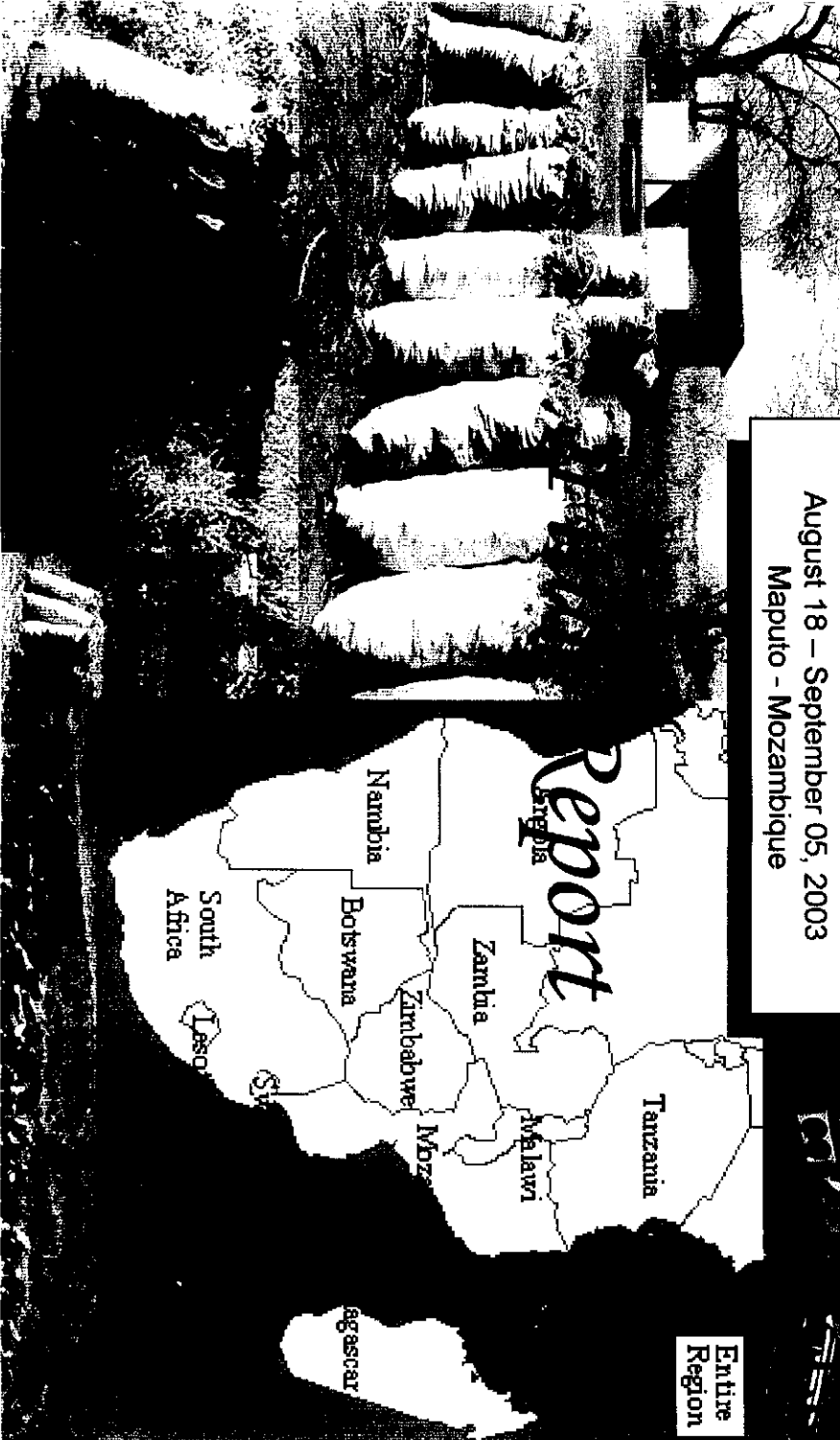


REPÚBLICA DE MOÇAMBIQUE
 MINISTÉRIO DOS RECURSOS MINERAIS E ENERGIA
 DIRECÇÃO NACIONAL DE ENERGIA

SADC Course on Rural Energy Project Planning and Environmental Management



August 18 – September 05, 2003
 Maputo - Mozambique





UNIVERSIDADE EDUARDO MONDLANE
FACULDADE DE CIÊNCIAS
DEPARTAMENTO DE FÍSICA



EASTERN AND SOUTHERN
AFRICAN MANAGEMENT
INSTITUTE (ESAMI)



REPÚBLICA DE MOÇAMBIQUE
MINISTÉRIO DOS RECURSOS MINERAIS E ENERGIA
DIRECÇÃO NACIONAL DE ENERGIA

FINAL REPORT

September, 2003

COURSE ON RURAL ENERGY PROJECT PLANNING AND ENVIRONMENTAL MANAGEMENT

1. Introduction

The countries of the Southern African Development Community (SADC) region are facing severe and interrelated problems of energy and environment. Growing shortages of traditional fuels, such as wood, are due to increased population pressure on land, biomass and other limited resources. About 80% of the population in the SADC region depend on wood fuel for domestic use, and also many agro-processing industries require substantial amounts of wood. Resource depletion and environmental degradation impede rural development. The environmental impacts of new and intensified production processes aggravate the degradation of ecological systems. The solution to the shortages of rural energy represent a challenge which should be oriented to improve demand-side management and enhance the effectiveness and efficiency of energy use, in conjunction with the optimisation of fuel supply. Having these facts in mind the SADC energy Ministers have placed high priority on rural energy planning and also on strengthening of local institutional capabilities to plan, implement, monitor and evaluate wood fuel projects effectively. In support of this objective the Technical Administrative Unit (TAU) of the Energy Sector of the SADC community, based in Luanda, Angola, sought funding from the Netherlands Ministry of Foreign Affairs (DGIS) in order to support the design of a training programme aiming at introducing planners and managers to the concepts and skills required for an analysis of rural energy problems. The Eastern and Southern African Management Institute (ESAMI), based in Arusha, Tanzania, was contracted to undertake this activity, supported by the Technology and Development Group of the University of Twente (TDG-UT), from the Netherlands. As a result of the work carried out a core curriculum and a training programme comprising eleven separate courses in rural energy planning and environmental management was designed and its implementation started during the past decade. The aim of the courses within the programme is to introduce planners and managers to the concepts and skills required for analysis of rural energy problems, and to help them to produce effective solutions. The training is job-oriented. The methodology of the courses is based on an overall framework, which links the different planning elements in a systematic way. It shows that if rural energy planning and environmental management are to be effective, energy needs should be the starting point, and that they should be analysed within the context of the physical, social and economic environment found in rural areas. Local resources, appropriate energy technology systems, human resources and appropriate energy policies can then be identified. All courses are specifically designed to be used in the SADC countries. They address the particular rural energy and environmental problems of the SADC region. The courses fall into three broad distinct groups based on their content: (i) technical courses (biomass energy technologies - 3 weeks -, solar energy technologies - 2 weeks -, wind energy technologies - 2 weeks -, energy technology assessment - 3 weeks); (ii) management

courses (rural energy planning and environmental management - 3 weeks -, rural energy project planning and environmental management - 3 weeks -, social and agro-forestry for energy and environmental management - 2 weeks -, data survey methods and applications for energy planning and environmental management - 2 weeks -, gender analysis in energy planning and environmental management - 2 weeks) and (iii) communication courses (communication planning and mass awareness - 2 weeks -, training of trainers in rural energy planning and environmental management- 3 weeks). The target group for the courses are professionals working in the broad field of energy planning and environmental management, including agriculturalists, economists, foresters, engineers, planners and policy makers from government, non-governmental organisations (NGO's) and private sector.

Reference on general problems of energy and environment faced by the SADC countries was made above. Surveys carried out by different organisations indicate that lack of skilled manpower is a factor contributing to this problem. This course on **"Rural energy project planning and Environmental Management"** attempts to address those by offering specialists in the region the opportunity to acquire skills which will increase their capacity for effective decision making in the fields of planning and technology assessment as they relate to rural energy and environment.

The view of many experts in the region is that the lack of rural energy plans is a fundamental constraint in ongoing national and regional efforts to attain sustainable energy supply and environmental management in the rural areas. Policies and plans are needed to achieve multi-sectoral coordination in rural development and to estimate manpower and other resources required for implementing the plans and ensure that people are trained and resources secured to implement development programmes.

Energy planning only came to prominence after the first major oil price rise in 1973, and governments, at first, focused on ensuring secure supplies of strategic commercial energy sources such as oil, coal and electricity. Since then it has been realized that effective energy planning needs an understanding of the entire energy system, of which energy demand is vital, if complex, component. It has also been realized that energy use has major environmental impacts, and this environmental dimension needs to be incorporated into energy planning. It is also very important that planning has a rural focus.

Decision makers have to be aware that simple, single-sector 'solutions' to rural energy problems do not exist. Rural energy planning is a broad-based approach because it has to match the complexities of rural society. Therefore, an underlying assumption in this training course is that decision makers need to take a multi-disciplinary perspective towards rural energy planning, and the starting point should be at the grass roots, rural community level.

The target group for this specific course are decision makers, planners and managers involved in rural energy planning and environmental management from government, NGOs and the private sector. Participants should be qualified academically with a degree and should have several years of work experience in appropriate disciplines.

This course has been implemented in English language since the past decade by ESAMI and by the Minerals and Energy Education and Training Institute - MEEETI, from South Africa. ESAMI subcontracted the Solar Energy Research Programme of the Eduardo Mondlane University (UEM) to organise the course in Maputo in Portuguese in order to enable a full participation of the two Portuguese-speaking countries in the SADC region, namely Angola and Mozambique.

2. Contents of the Course

The course is arranged into five modules, which are linked together as explained in the course manual.

Module 1, *Introduction and Overview*, presents the key issues in energy and environment facing SADC countries. The next three modules, *Data Needs and Survey*, *Energy Planning*, and *Environmental Management*, review the information, the skills and the tools, which planners need to address these key issues. In the final module, *Energy and Environmental Policy and Institutions*, the focus is on the broad policy and institutional context in which planners and decision makers have to operate.

ESAMI in collaboration with TDG has elaborated a self-contained course manual on rural energy planning and environmental management. The Solar Energy Research Programme, who translated the manuals, made the present course possible. The course was conducted according to the mentioned programme, which included a field visit to Mahau, Matuine District, a rural area located some 120 Km South of Maputo.

3. Preparation of the Course

The preparation of the course comprised basically two activities: (i) the translation of the manual on "Rural energy project planning and Environmental Management" elaborated by ESAMI from English into Portuguese and (ii) the organisation of the training activity. The first activity has been carried out during the period going from July 2001 to May 2002. Then an organising committee has been set up in order to prepare the training activity. The organising commission had the task to identify a suitable place for running the course, to identify and invite facilitators to give their inputs into the course and also to make the link with the national directorates of Angola and Mozambique in order to provide participants.

4. Funding of the Course

The course was scheduled for 24 participants, 15 of which would be funded by a grant provided by DGIS via MEEETI (for eight participants from Angola and seven from Mozambique), and 9 by a grant provided by the Norwegian Agency for International Cooperation (NORAD) via DNE (only for Mozambican participants).

5. Participants

One important objective to be achieved in this training activity is a good involvement of female participants, as according to the traditional division of work they are responsible for providing fuel for domestic use. A target of 40% of participation of women was exceeded.

The task of identifying participants was given to the national directorates of energy of both countries. Prior to the start of the training activity, Angola has provided a list of 8 participants and Mozambique presented a list of 16 participants. The final statistics of participation, in terms of country of origin and sex is presented in the tables below.

Table 1 – List of Participants

N.º	Nome	Sexo	origem
1	Albertina Lisboa	female	Mozambique – Inhambane
2	Alcina Manhica	female	Mozambique – Maputo
3	Argentina da Glória	female	Mozambique – Maputo
4	Berlinda Joaquim Arlindo	female	Mozambique – Niassa
5	Cândida Cumbe	female	Mozambique – Maputo
6	Cândida Zita	female	Mozambique – Maputo
7	Clara Sanches	female	Angola
8	Emilia Fumo	female	Mozambique - Cabo Delgado
9	Euclides Rego Dias	male	Mozambique – Gaza
10	Fátima Cangui	female	Mozambique – Maputo
11	Henure Mudoro Matene	male	Mozambique – Manica
12	João Gouveia Ngunza	male	Angola
13	Júlio Tsimpho	male	Mozambique – Maputo
14	Lombo Matusiwa	male	Angola
15	Luciano Paulo Vidal	male	Angola
16	Luisa André Cuchamano	female	Mozambique – Teie
17	Miguel António Manuel Diogo	male	Angola
18	Mónica Vicente Barbeiro	female	Mozambique – Sofala
19	Newton Jorge O. Gamboa	male	Angola
20	Norah Greta Chade	female	Mozambique – Nampula
21	Norte Luaili	male	Mozambique - Cabo Delgado
22	Raul Dongama	male	Mozambique – Zambezia
23	Telmo Vaz Cardoso	male	Angola
24	Vieira Manuel Fernando de Carvalho	male	Angola

Table 2 – General Statistics of Participants

	Number	Percentage
Total Number of Participants	24	100.00%
Angolans	8	33.33%
Mozambicans	16	66.67%
Female	12	50.00%
Male	12	50.00%

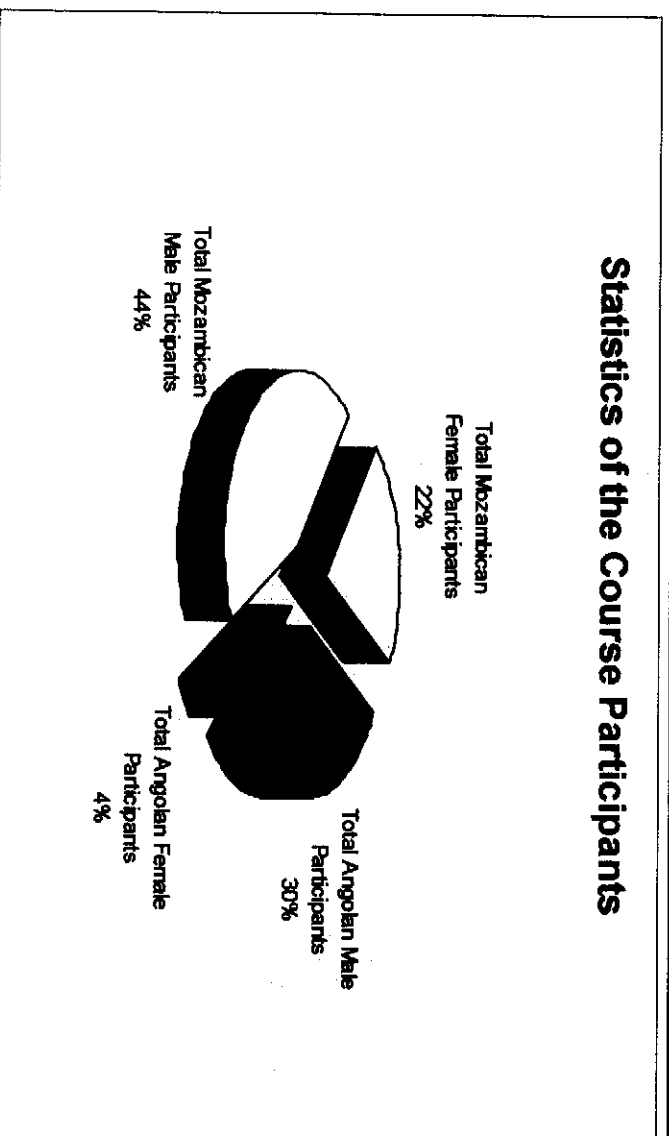
Table 3A – Statistics of Participants by Country (Angola)

	Number	Percentage	Percentage (from total)
Total Angolan Participants	8	100.00%	33.33%
Total Angolan Male Participants	7	87.50%	29.17%
Total Angolan Female Participants	1	12.50%	4.17%

Table 3 B – Statistics of Participants by Country (Mozambique)

	Number	Percentage	Percentage (from total)
Total Mozambican Participants	15	100.00%	62.50%
Total Mozambican Male Participants	10	66.67%	41.67%
Total Mozambican Female Participants	5	33.33%	20.83%

Statistics of the Course Participants



6. Facilitators and Speakers

In order to cover the different subject matters involved in the training activity, facilitators from different backgrounds had to be identified. The total number of facilitators and speakers was of 20, representing and/or originating from several institutions like the Faculty of Agronomy and Forestry Engineering, the Faculty of Engineering, the Faculty of Sciences, all at the Eduardo Mondlane University, the

Cahora Bassa Dam (MOZ), the Technical Unit for the Management of Hydropower Dams (UTTIP) (MOZ), the Regional Water Management Authority of the South of Mozambique (ARA – Sul), the International Unit for the Conservation of Nature, the Norwegian Agency for International Cooperation (NORAD), the Ministry of Planning and Finance (MOZ), the Ministry for the Coordination of Environmental Actions (MOZ), the National Directorate of Energy (MOZ), the Ministry of Energy and Water (Angola), as well as an independent consultant. The table below gives the distribution of the facilitators in terms of sex.

Table 4 – List of Facilitators and Speakers

N.º	Facilitators / Speakers	Institution	Country	Sex
1	Alberto Tsamba	UEM – Engineering	Moçambique	Male
2	Anne Krone Helgestad	NORAD	Moçambique	Female
3	António Mubango	UEM – Sciences	Moçambique	Male
4	Aristides Baloi	UTIP	Moçambique	Male
5	Boaventura Cuamba	UEM – Sciences	Moçambique	Male
6	Cândida Zita	UEM – Agron. and Forestry	Moçambique	Female
7	Eugénio Silva	UEM – Sciences	Moçambique	Male
8	Felicidade Munguambe	MICOA	Moçambique	Female
9	Francisco Meireles	Min. Water & Energy	Angola	Male
10	Isilda Nhantumbo	IUCN	Moçambique	Female
11	José Matsinhe	Nat. Dir. Energy	Moçambique	Male
12	Manuel Gamito	Min. Plan. & Finance	Moçambique	Male
13	Margarita Mejia	Independent Consultant	Moçambique	Female
14	Marta Monjane	IUCN	Moçambique	Female
15	Máximo Mandava	Nat. Dir. Energy	Moçambique	Male
16	Michaque Alberto	UEM – Agron. and Forestry	Moçambique	Male
17	Paulo César Selemane	ARA - Sul	Moçambique	Male
18	Samuel Souto	UEM – Agron. and Forestry	Moçambique	Male
19	Telma Manjate	IUCN	Moçambique	Female
20	Valentim Mendes	Cahora Bassa Dam	Moçambique	Male

Table 5 – Statistics of Facilitators

	Number	Percentage
Total Number of Facilitators and Speakers	20	100.00%
Female Facilitators / Speakers	7	35.00%
Male Facilitators / Speakers	13	65.00%

7. Course Evaluation

7.1 Evaluation by the Participants

The course was evaluated both by the participants and by the organizers. The participants were given evaluation forms, to be filled and surrendered anonymously, in order to guarantee freedom of expression. The forms were distributed at the end of

every week for a weekly evaluation and at the end of the course for a final evaluation. Additionally a meeting was convened on the last day for the sole purpose of providing the participants an opportunity to frankly and openly make a few remarks about the course, which they did.

A summary of the written evaluations of the participants is attached hereto.

Both in the written evaluation as well as in the referred meeting the participants unanimously considered the course useful and well conducted. Some common and outstanding comments were made, which are presented below:

- The time was too short to deal with some of the interesting subjects in an appropriate and more fruitful manner;
- The presentations of the facilitators were generally good and very good;
- The manual and other supporting material were considered good, despite some limited problems to be corrected, like some faint and hardly visible pages and a few remaining misspelled words (already corrected);
- The group work sessions and respective presentations were positive and productive, with the merit of bringing the participants together and strengthening the gained knowledge by means of interaction and practical exercise. The participants would like to have more group work sessions;
- The field trip was considered an excellent occasion to see on site some particular aspects learned during the sessions. Participants would generally like to have had at least one more field trip;
- Participants were keen to implement their knowledge as soon as possible and would like to take part in more courses on the same and related subjects, particularly in the soon coming “Course on Rural Energy Project Planning and Environmental Management”;
- The lunch service was not considered good by a substantial number of the participants.

7.2 Evaluation by the Organizers

The organizers agree with the critics and are grateful for the generally good appraisal. In addition to the above referred the organizers believe that there is room for improvement in the coming courses, especially but not only on administrative aspects. For that purpose the organizers held daily and weekly meetings during the

course, where many annotations were made. The following comments summarize the evaluation of the organizers:

- The course was well conducted, with clearly visible improvements in comparison to the TOT course held in 2002.
- The level of the participants was good and appropriate, which helped to achieve the positive results;
- The participants were enthusiastically participative and quickly managed to mingle and form a strong collective. An additional improvement from last years TOT course;
- The facilitators were committed and had a professional approach, which was essential to the overall rating of the course, also better than in the TOT course;
- Some weaknesses in the organization, particularly on the catering were registered, which nevertheless did not affect the overall rating of the administrative setting;
- The organizers made effort in order to achieve a desirable gender balance, which was exceeded. The organizers will try to at least keep a minimum desirable balance in coming occasions.

8. Budget

A detailed breakdown of the budget is attached to this report.

9. Conclusions and Recommendations

The purpose of the course was to provide the participants sufficient skills to deal with rural energy planning and environmental management.

The organizers believe that these courses should be repeated after a certain period of time in order to strengthen and update the skills of the participants. The period would depend both on the assessment to be made in participants countries and agencies as well as on the availability of resources.

Short courses should be also organized for decision makers, like National Directors, in order to improve their sensitiveness to the aspects related to rural energy and environment.

In the opening ceremony the Permanent Secretary of the Ministry of Mineral Resources and Energy of Mozambique addressed the participants with welcoming speech, gratefully underlining the importance of the Portuguese courses in the SADC Training Programme. Many other dignitaries took part in the opening ceremony.

The closing ceremony was lead both by the Permanent Secretary of the Ministry of Mineral Resources and Energy of Mozambique as well as by the Director of the Science Faculty of the Eduardo Mondlane University, who praised the successful organization of the course and congratulated the participants, stressing the importance of the collaboration between both countries (Angola and Mozambique). The National Director for Energy, who honoured the event with a few significant words, also witnessed the closing ceremony. At the same occasion the Director of Human Resources of the Ministry of Energy and Water of Angola delivered an important message to the participants, encouraging them to implement what they learned.

Maputo, June 2003

Boaventura Chongo Cuamba

Course Director

Financial Report

FINANCIAL REPORT

COURSE ON RURAL ENERGY PROJECT PLANNING AND ENVIRONMENTAL MANAGEMENT

On the Table below we show the total exercise of disbursements done in the preparation and implementation of the Course on Rural Energy Project Planning and Environmental Management.

1. Costs are presented in USD. The disbursements made in SEKs, MZMs and ZARs are converted into USD with the exchange rates of SEK 9.55/USD, MZM 24 200/USD and ZAR 10.0/USD respectively;
2. As it can be seen in the Table, apart of some budget lines a major effort has been done to follow both the structure and the values set by the donor, despite some objective constraints.
3. Sometimes, investment costs like installing a new air conditioning unit or replacing the old fax machine of the Department had to be supported. Their costs were met by different sources, including advancement from other projects.
4. Many other costs were met, but are not included in the present report since they would fall beyond budget, both in terms of value as well as in context as per referred structure.
5. The figures foreseen for the budget line “Costs with students” were slightly surpassed by the actual amount disbursed, mainly due to the use of a bus for the daily transport of the students, for which we used part of the funds made available for External Resource Persons Air Travel. Public transport service is poor and unreliable in Maputo, while no accommodation is available in a walking distance to the Eduardo Mondlane University main Campus. The referred bus was also used for the second field visit.
6. The Honoraries for the facilitators were paid slightly above the limits of the available budget (US\$ 5 250), by means of the referred advancements, as we understand that the difference will be covered by the funds still to be disbursed.
7. The daily coffee and lunch service provided for all the participants, facilitators, organizing and supporting staff is included under Accommodation and Meals (3.2 in the budget) with the total value of US\$ 4 670.00.
8. While we are mailing copies of all the supporting documents to the present financial statement, an internal auditing of the account, which goes on routinely every six months, will be taking place later this year, so the original receipts should be kept in Maputo.

Being not familiar with the required format for financial reporting, we thank in advance comments on the way we can improve the report.

Maputo, September 2002

The Administrative Director of the Course

Prof. Rogério Uthui

COURSE ON RURAL ENERGY PROJECT PLANNING AND ENVIRONMENTAL MANAGEMENT
Budget Breakdown (column F) and Real Costs (column E)

A	B	C	D	E	F	G
Activities	(SEK)	(10 ³ MZM)	Real Costs		Amount Available (USD)	Difference (F-E) (USD)
			(ZAR)	(USD)		
1. Costs with students				31 083.8	30 750.0	- 333.8
1.1 Travel (15 people: 8 from Angola and 7 from Mozambique)				12 044.8	12 000.0	- 44.8
1.1.1. Transit Hotel expenses in JHB (8 people x 2 nights)			10 149.4	1 014.9		
1.1.2. Transport Expenses and Airport Taxes		4 680.0		195.0		
1.1.3. Air tickets for 8 Angolan and 7 Mozambican Participants				8 968.0		
1.1.4. Late payments of air tickets (changing of schedule)			4 350.0	435.0		
1.1.5. Rent-a-Bus for Local (daily) Transport				1 400.0		
1.1.6. Excess Luggage Fees (Angolans)		764.0		31.8		
1.2 Accommodation and Meals				18 276.0	18 000.0	- 276.0
1.2.1. Accommodation at Hotel Andaluia (15 people x 21 days)				11 350.0		
1.2.2 Welcome Dinner (12 people)				300.0		
1.2.3. Dinners (15 people x 24 days) per-diem allowances handed out to participants and meals				4 737.0		
1.2.4. Closing Ceremony (40 people)				1 889.0		
1.3 Allowances for Field Visit				763.0	750.0	- 13.0
1.3.1. Likhwate				588.0		
1.3.2. MOZAL				175.0		
2. Honoraries				6 000.0	5 250.0	- 750.0
2.1 Facilitators (Alberto Tsamba, J. Matsinhe, STADEP staff, Michaque Alberto and Isabel Casimiro)						
3. Costs with External Facilitators				4 869.5	4 750.0	- 119.5
3.1 Travel for External Facilitators (Alberto Tsamba)	10 500.0			1 099.5	1 500.0	
3.2 Local Travel for External Facilitators (Alberto Tsamba)				100.0	100.0	
3.3 Accommodation and Meals (Daily Lunches and Coffee Services)				3 670.0	3 150.0	
4. Communication and Marketing Expenditures				600.0	600.0	0.0
Telephone, Fax and other expenses (through Faculty of Science)						
GRAND TOTAL				42,553.25	41,350.00	-1,203.25