

EVALUATION OF THE ENERGY SUBPROGRAMME

UNITED NATIONS ENVIRONMENT PROGRAMME
PROJECT DESIGN AND EVALUATION UNIT

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by
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LIST OF ABBREVIATIONS AND ACRONYMS

ADB	African Development Bank
AIJ	activities implemented jointly
CDM	clean development mechanism
DANIDA	Danish International Development Agency
GEF	Global Environment Facility
GHG	greenhouse gas (or the basket of greenhouse gases controlled by the Kyoto Protocol)
GTZ	German Agency for Technical Cooperation
IBRD	International Bank for Reconstruction and Development (World Bank)
IEA	International Energy Agency
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
JI	joint implementation
JPO	junior Professional officer
M&T	monitoring and targeting
ODA	overseas development assistance
OECD	Organisation for Economic Cooperation and Development
RETs	renewable energy technologies
RNL	Risø National Laboratory
SAP	Scientific Advisory Panel
UNEP TIE	Division of Technology, Industry and Economics of UNEP
UCCEE	UNEP Collaborating Centre on Energy and the Environment
UNDP	United Nations Development Programme
UNDP SEED	United Nations Development Programme Sustainable Energy and Environment Division
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
UNOPS	United Nations Office of Procurement Services

EXECUTIVE SUMMARY

1. The purpose of this exercise is to evaluate the overall performance of the United Nations Environment Programme (UNEP) Energy subprogramme. The evaluation covers the work undertaken for the subprogramme by the UNEP Collaborating Centre on Energy and Environment (UCCEE), based at Risø National Laboratory (RNL), Denmark.

2. The report addresses the issues set out in the terms of reference dated 22 June 1999. No time period was specified and it was extremely difficult to obtain documents from 1996 onwards so the evaluator concentrated on the projects and work undertaken from 1996 to 1999. This period coincides with a change in funding for the subprogramme, as well as a change in direction and structural reorientation.

A. Key findings

3. The key findings of this evaluation can be summarized as follows:

(a) The overall impact and contribution of the energy subprogramme to improvement in the quality of the environment has been tempered by a low level of funding and only one permanent staff member up to October 1998. Core funding has increased for the period 1998 to 2000;

(b) The projects undertaken by the subprogramme have, in the main, complemented the priorities and plans of UNEP, other United Nations agencies, cooperating agencies and Governments. Interactions with other United Nations agencies and outside organizations have been varied to date, both in terms of value and types of collaboration. New interlinkages are currently being investigated;

(c) The capability and efficiency of the subprogramme regarding use of resources, its capability for networking and resource sharing has increased since permanent staff were appointed in 1998 and 1999. The Danish Ministry for Foreign Affairs, through the Danish International Development Agency (DANIDA), has provided substantial co-funding to the Subprogramme. This has enabled UCCEE to undertake many more projects for the subprogramme than otherwise would have been possible from the core Environment Fund allocation alone;

(d) The relationships with other subprogrammes and UCCEE are good. Administrative institutional structures need to be streamlined, as administration has been split between the Paris and Nairobi offices of UNEP, and UCCEE;

(e) UCCEE has contributed to the achievements of the subprogramme with respect to quality, relevance and impact in relation to the delivery of results;

(f) The viability and/or replicability of projects implemented by the subprogramme have varied, influenced generally by the original objectives of the project rather than by the quality of the project. Projects initiated by subprogramme staff in 1999 have focused on facilitating the financing of sustainable energy and energy efficiency projects in developing countries and countries in transition. A new energy mission statement and strategy are under development;

(g) The utility and application of the project information materials and publications are of high quality but variable use. Distribution is not as extensive as it could be;

(h) Management of the subprogramme, particularly in the areas of strategic guidance and supervision of the implementation of activities, has been carried out competently;

(i) A number of problems and issues affecting the subprogramme have been identified and recommendations made. Successes have also been highlighted;

(j) The monitoring and evaluation systems developed to supervise and control the Subprogramme have been inadequate.

B. Recommendations

4. Global environmental problems are increasingly a motivator for international funding agencies. The provision of clean energy services, suited to the needs of the user, is a fundamental element which must be incorporated into energy planning for national and regional projects as a matter of course. This includes energy planning in non-energy sectors (e.g. healthcare, education, industrial development, etc.). This analysis must include environmental considerations as well as 'best fit' technology and economic considerations. Such expertise needs to be inherent in relevant organizations within both the private and public sectors.

5. Linked to this is the evolving need to ensure that projects implemented under mechanisms such as the clean development mechanism (CDM), support investments in long-term sustainable energy developments.

6. The energy subprogramme is uniquely placed to take a pivotal role in promoting mainstream consideration of sustainable energy solutions and sound investment decisions for energy technologies in developing countries. In doing so, it would be contributing to the overall Mission of UNEP.

7. The recommendations can be summarized as follows:

(a) Formalize mission statement and strategy: Once this is completed, new priorities and targets can be put in place. It is recommended that priority areas in terms of geographical spread of projects and their focus be maintained;

(b) Develop stronger interlinkages with other UNEP units, United Nations agencies, and outside organizations: In this process, the following measures should be considered:

- (i) To investigate interlinkages with other UNEP programmes and units (e.g. natural resources);
- (ii) To continue to promote efficient use of energy through existing infrastructures, consistent with the Division of Technology, Industry and Economics (TIE) cleaner production approach;
- (iii) To increase participation in the tourism subprogramme (particularly collaborating on clean energy systems for tourism in developing countries), and in the Economics and Trade Unit's insurance finance initiative;
- (iv) To increase leveraging in outside programmes, including other UN organs and agencies, the World Bank Group, Regional development banks and the European Union;
- (v) To strengthen linkages with the International Energy Agency (IEA); bilateral agencies, private organizations (e.g. financial, institutional and intermediaries).

(c) Strengthen funding mechanisms: In order to undertake many of the recommendations made by this evaluation, and to allow the subprogramme to fulfil the UNEP mission on energy, the budget given to the subprogramme through the Environment Fund must continue to increase. Additional funding could be leveraged through:

- (i) Continued and expanded use of Global Environment Facility (GEF) small and medium-sized grants;
- (ii) Intermediary action between other financial institutions and possible project partners;
- (iii) Country funding of additional staff;

(iv) Country trust funds for specific projects;

(v) Private co-funding opportunities, without compromising the integrity of UNEP;

(d) Continue to give priority to assisting African countries: UNEP should continue to focus on Africa, building on the programme's strengths and achievements to date;

(e) Streamline administration: In order to streamline administration, it is recommended that the Paris operations become responsible for all subprogramme documentation. Standard monitoring and evaluation systems need to be implemented to supervise and run the subprogramme. This includes projects undertaken by UCCEE and, at UNEP/TIE, in Paris

(f) Become a clearing house for sustainable energy technologies: There is a great need for a global coordinating centre for sustainable energy projects, policies and publications. This "one-stop shop" on environmentally-sustainable energy technologies would have particular value for Governments in developing countries and those organizations wishing to implement new projects. This would be supported by the following actions:

(i) Inter-agency committee on sustainable energy;

(ii) Expanded initiatives for sustainable transport;

(iii) Provision of experts:

a. For reviewing rural electrification and fossil fuel projects in developing

b. For quantifying greenhouse gas (GHG) emission abatements etc., aligned to the introduction of clean development mechanism (CDM) and joint implementation (JI);

c. Seconded to the African Development Bank, to review national rural electrification plans and advise on environmental effects and sustainable energy issues;

d. Available from centres of environmental reference for Africa; and

e. From an expert database set up to support renewable energy and energy efficiency projects.

(iv) Expand assistance to the financial sector with regard to facilitating RE/EE projects;

(v) Continue capacity-building activities, with increased emphasis on expanding local expertise; and

(g) Publications: Publications are an important output of the energy subprogramme. It is recommended that their distribution be undertaken by the UNEP publishing house, with the mandate to publicize them more widely. It is further recommended that an outside peer review be undertaken of all recent and planned publications, in order to verify their usefulness.

I. INTRODUCTION

A. Background

8. In July 1999 an evaluation of the energy subprogramme based in Paris, commenced. The evaluation covers the work undertaken for the subprogramme in Paris and by UCCEE, based at Risø National Laboratory in Denmark.

9. The goals of this evaluation are detailed in section II below. The report follows, as far as possible, the guidelines detailed in the terms of reference documentation, dated 22 June 1999.

10. The period of evaluation was not specified in the terms of reference. The years selected; i.e., 1996 to July 1999, were for the following reasons:

(a) The energy subprogramme commenced in 1990. From 1990 to 1996, there were a number of changes in programme direction and funding levels. In 1996, the energy subprogramme underwent significant change in direction, staffing and funding, and has maintained that basic operational structure today;

(b) Changes in the global response to climate change (e.g. Kyoto Protocol, Buenos Aires Declaration, etc.) from 1996;

(c) Perceived lack of relevance of the years prior to 1996 for the energy subprogramme's current operations and direction.

(d) Problems in obtaining project documents and other documentation relevant to the evaluation for the years prior to 1996.

B. Purpose and methodology of the evaluation

1. Purpose of the evaluation

11. The purpose of this exercise is to evaluate the overall performance of the UNEP Energy subprogramme. The evaluation report addresses the following issues as set out in the terms of reference:

(a) Overall impact and contribution of the energy subprogramme to improvement in the quality of the environment;

(b) Appropriateness of the subprogramme in relation to the priorities and plans of UNEP, other United Nations Agencies, cooperating agencies and Governments;

(c) Present capability and efficiency of the subprogramme in the use of resources, its capability for networking and resource sharing;

(d) Effectiveness of the institutional structures (staffing, support systems, and relationship to other subprogrammes) and UCCEE;

(e) Activities of UCCEE with respect to quality, relevance and impact, both in relation to direct target groups and to its contribution to the overall subprogramme;

(f) Viability and/or replicability of projects implemented by the subprogramme;

(g) Utility and application of the project information materials and publications;

(h) Management of the subprogramme, particularly in the areas of strategic guidance and supervision of project implementation;

(i) Identification of problems and issues affecting the subprogramme, and recommendations;

(j) Adequacy of the monitoring and evaluation systems developed to supervise and control the subprogramme; and

(k) Recommendations on changes for the subprogramme, taking into consideration the increase in global concern over climate change and the role of UNEP in the United Nations Framework Convention on Climate Change (UNFCCC). The recommendations show how the subprogramme will remain relevant in the future.

2. Methodology

12. The evaluation has been undertaken using the following UNEP information sources:

- (a) Brochures (UNEP general information and information specific to the Division of Technology, Industry and Economics)
- (b) Information leaflets and briefing notes;
- (c) Project documents;
- (d) Internal documents (including minutes of MPC and SAP meetings);
- (e) Websites (UNEP and Units of the TIE Division homepages);
- (f) UCCEE through the website and publications.

13. Other information materials used have included the websites of other United Nations organizations (e.g. United Nations Development Programme (UNDP), United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations Industrial Development Organization UNIDO) and publications relevant to the evaluation.

14. A list of information sources is contained in Annex I. Information not available to the evaluator includes UCCEE reports to UNEP (although two sets of minutes of the management and policy committee (MPC) meetings were available) and UCCEE final project reports.

15. The evaluator visited the subprogramme team in Paris on two occasions for extensive consultation, and met with Mrs. Jacqueline Aloisi de Lardere (Director, TIE), Mr. Mark Radka (Energy Programme Coordinator) and Mr. Eric Usher (energy expert, funded by the Global Environment Facility (GEF) project, administered by UCCEE). Communication by telephone and e-mail was also conducted with Mr. John Christensen, Head of UCCEE.

16. In order to evaluate the projects, a table was created which included the following information (when available): project; dates undertaken; funding (in dollars), objectives; deliverables; and achievements or status. From the available documentation, the projects were analysed to see if the objectives had been achieved and the project targets delivered. Source documentation included project documents, final reports, publications and website entries. Where written documentation was not conclusive, queries were followed up by conversations and e-mail correspondence with relevant UNEP and UCCEE staff. The list of projects on which the evaluation is based is contained in Annex II.

17. One of the barriers to undertaking this evaluation has been the lack of data available on most projects, particularly for the period 1996 to 1998, and data enabling verification of project results. This situation is reflected in the analysis undertaken in Section B in particular.

18. In order further to verify results, other independent organizations and experts were contacted informally and in confidence, in order to ascertain their expert opinions. They are not listed due to confidentiality, but represent the major organizations involved in climate change in Europe and the United States of America. No other United Nations organizations were contacted, due to the confidentiality of the evaluation. No organizations in developing countries were contacted due to lack of information about whom to contact to verify results of workshops, etc.

19. These verification actions were not specified as necessary in the terms of reference. No budget was available to travel to UCCEE, no organizations

were given in developing countries to contact to verify results and no documents were made available from either of the three sites (Paris, Nairobi, Risø) to allow more than a superficial analysis. The evaluator found verification actions very useful and recommends that the remit and budget for future evaluations be expanded to allow for such activities.

II. PROGRAMME DESIGN AND ACCOMPLISHMENTS

20. In 1998, the UNEP Technology, Industry and Economics (TIE) Unit was restructured, and the energy subprogramme shifted to operating under the direction of Energy and OzonAction. The supporting role of UCCEE remained the same, as per the memorandum of understanding signed by Danida, Risø National Laboratory and UNEP in 1994. In October 1998, Mark Radka was appointed Energy Programme Coordinator, with subsequent support provided by energy consultant Eric Usher, whose position is funded by the GEF project administered by UCCEE).

21. Prior to this, the energy subprogramme's work had been undertaken either by the UCCEE in Denmark (90 per cent) or by short-term consultants (10 per cent), with overall management undertaken by Mrs. Aloisi de Lardere. The lack of UNEP staff has had some negative results:

(a) Lack of continuity in a project, where expertise outside UNEP or UCCEE was required for more than six months in a year;

(b) No monitoring and evaluation procedure used for UCCEE projects;

(c) Lack of project reports, particularly in the Paris office.

22. One major failure of the programme as undertaken by UCCEE, has been not to carry out regular and systematic review of the effectiveness of activities and the relevance of its publications. A monitoring and evaluation procedure is required for all UNEP programmes and projects, and it is therefore recommended that this be implemented for all UCCEE projects as a matter of course.

23. The energy subprogramme has achieved a number of important results over the last three years and now has a firm basis from which to proceed in an increasingly positive manner. An analysis of the programme from 1996 to 1999 is given below, based on available data.

A. Appropriateness of the subprogramme

1. Context within UNEP

24. In order to assess the appropriateness of the subprogramme, it is necessary to understand the context in which it operates.

25. The overall mission statement of UNEP is:

"To provide leadership and encourage partnerships in caring for the environment by inspiring, informing and enabling nations and people to improve their quality of life without compromising that of future generations".

26. UNEP is the only agency within the United Nations addressing environment on a global scale as its primary focus. Its role in energy complements work and programmes undertaken by other agencies.

27. The general priority areas of UNEP relevant to energy, as approved at the Nineteenth Session of the Governing Council, include:

(a) Promoting implementation of global environmental conventions;

(b) Bringing about a societal shift to preventive rather than restorative measures in the production of goods and services, with an emphasis on capacity-building and the transfer of environmentally sound technologies to developing countries;

(c) A geographical emphasis on programmes and activities that benefit Africa.

28. The energy subprogramme operates under the direction of the Energy and OzonAction Unit in Paris which is a Unit of the TIE Division, one of the six

divisions within UNEP. TIE works with decision-makers in Government, local authorities, and industry to develop and adopt policies and practices that:

"are cleaner and safer; make efficient use of natural resources; ensure adequate management of chemicals; incorporate environmental costs; and reduce pollution and risks for humans and the environment".

29. The TIE policy on energy states:

"Energy is a major component of economic development. Its production and consumption, however, have major short- and long-term impacts on the environment. Government and industry should therefore intensify efforts to formulate sustainable energy policies and develop technologies for production and use of energy in an economically efficient and environmentally sound manner".

30. The energy subprogramme is currently drafting a new mission and programme statement which takes into account the cross-cutting nature of energy to all aspects of life, the work being undertaken on sustainable energy issues and implementation by other organizations, and the unique role that UNEP can play in this field, particularly, vis-à-vis other United Nations organizations^{1/}.

2. Global context

(a) Kyoto implementation mechanisms

31. Over the past three years, there has been a global change of emphasis in the relationship between energy generation, transmission and usage, and the environment. In 1992, the Rio Earth Summit put the environment firmly into global consciousness with Agenda 21 setting out actions necessary to achieve environmental targets. It was not until 1997, however, that the Kyoto Protocol set actual targets for reduced emissions of greenhouse gases (released primarily by burning fossil fuels to generate electricity). The Annex I Parties to the Kyoto Protocol account for the vast majority of global greenhouse gas and carbon dioxide emissions.

32. The Kyoto Protocol established three implementation mechanisms designed to enable Governments and industry to meet the targets: JI, CDM and Emissions Trading (ET). In 1998, Activities Implemented Jointly (AIJ) became the forerunner of the first two mechanisms. Developing countries, due to their low GHG emissions, will become trading partners in the quest for developed countries to meet their emission targets through investment and offsets.

33. It is crucial for the success of these mechanisms, CDM in particular, that host countries are able to participate knowledgeably in all aspects of the identification, selection, implementation, and monitoring of projects. Host countries need expertise to participate in the subsequent verification of the emissions limitations and their certification. In 1998, UNEP, with various partners, organized a number of regional and global workshops on CDM. They showed that most developing countries would not be able to participate actively in CDM if it were to become operational at that time. At the meeting of the African Ministerial Conference on the Environment in October 1998 this view was confirmed, and it was specifically requested that "UNEP provide training and capacity-building to deal with sustainable development and the development and implementation of CDM projects".

34. At the fourth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), conducted in Buenos Aires in November 1998, the need for capacity-building was emphasized and the Climate Change Secretariat was requested to prepare a plan in this regard for the tenth session of the subsidiary bodies in 1999.

35. While negotiations continue it is important to start a process of awareness-raising, training and capacity-building. A key element of any such effort is to assist countries in identifying types of projects (sector, size, timing) that would not only be compatible with, but actively support,

^{1/} UNEP energy policy and programme, draft, September 1999

existing domestic policies and programmes in the area of sustainable development. It is vital that these activities also take into account national and regional renewable resources, and their development potential both in terms of physical resource and technology deployment.

36. Awareness-raising, methodology development and pilot level capacity-building programmes are some of the responsibilities of UNEP in the analytical areas associated with national work on inventories; impact, adaptation and vulnerability analysis; mitigation analysis; and strategy development. Such projects undertaken by the UCCEE since the early 1990s have contributed to the debate on, and understanding of, GHG emissions and climate change. Since 1996, UCCEE has published a number of documents that contribute to the understanding of these issues. CDM-related awareness-raising, training and capacity-building is, therefore, a logical extension of existing programmes supporting the climate change process.

37. The operational methodology for the three implementation mechanisms is not finalised, and much analysis must still be undertaken in order to finalise them into workable instruments. UNEP is involved in the negotiations and discussions, and the forthcoming programme reflects a continuing commitment to supporting work in these areas, both for UNFCCC itself, as well as facilitating empowerment of developing country organizations.

(b) Private finance

38. Parallel to work being undertaken globally on the above, another emerging issue is that of financing sustainable energy projects. Sections of the World Bank Group and GEF have taken a lead to establish renewable energy electricity generating technologies on a commercial basis^{2/}. These have been followed by other financial institutions including a range of public and private funding. The current need is for the private sector to become involved, both globally and nationally, particularly in developing countries.

39. A view of the World Bank^{3/} and the International Energy Agency (IEA)^{4/} is that renewable energy technologies are often the most cost-effective electricity generating options for rural areas of developing countries. A maturing global industry and international product standards (e.g. for micro-hydro, wind, solar photovoltaics) support many of these technologies. Confidence is, however, still low within the financial sector, even for investments in developed countries.

40. The energy subprogramme is taking the lead on two initiatives addressing this barrier. The main project is promoting private sector financing of commercial investments in renewable energy technologies and energy efficiency which leverages GEF funding. The second is a proposed project to assist the establishment of renewable energy enterprises in Africa, currently being reviewed for funding by another United Nations affiliate. These two projects will contribute to the objectives of UNEP by:

(a) Providing a lead in facilitating the development of clean, efficient energy systems in developing countries and countries in transition;

(b) Enabling SMEs to participate in the transition to clean and renewable energy technologies;

^{2/} For instance, the *IFC/GEF Photovoltaic Market Transformation Initiative

^{3/} Cabraal, A., Cosgrove-Davies, M., Schaeffer, L., Best Practices for Photovoltaic Household Electrification Programs, Lessons from Experiences in Selected Countries, World Bank Technical Paper 324, The World Bank, Washington D.C., 1996

^{4/} International Energy Agency Photovoltaic Power Systems Programme, Trends in PV power. Applications in selected IEA countries between 1992 and 1997, Task 1, December 1998.

- (c) Show-casing cost-effective financing of clean, efficient and renewable energy technologies;
- (d) Contributing to institutional investor confidence in renewable energy and energy efficiency projects;
- (e) Providing a framework for possible future CDM and JI investments;
- (f) Working with other organizations to produce a result larger than the sum of the individual parts.

(c) Energy efficiency

41. UNEP is one of the lead organizations for information on energy efficiency in industry, building and transport. Most of this support is given directly by the cleaner production (CP) subprogramme. The energy subprogramme has been assisting CP, where applicable, on issues related to energy, particularly in industry.

42. Transport is an area highlighted by many reports and studies as being of critical importance in the fight to reduce GHG emissions and other pollutants^{5/}. There is still a gap, however, between the analysis of the problem and finding sustainable solutions for developing countries.

43. The energy subprogramme has a project underway which looks at these issues and involves local players. "Deals on Wheels", or Sustainable Transport Initiatives, is run by UCCEE and addresses two main issues:

- (a) Global environmental change, through direct applied research;
- (b) Sustainable urban transportation, through research collaboration.

44. Another transport sector project being undertaken by UCCEE is a collaborative project with the World Bank to extend the climate change global overlays to the transport sector. This will look at integrating global environmental externalities into economic and social analysis of the transport sector.

45. UNEP is able to play an important, expanded role in facilitating sustainable transport systems, without duplicating projects or research being undertaken by other organizations. If this direction is taken, it is strongly recommended that a transport expert be appointed to the energy subprogramme (either through funding from the Environment Fund or a country trust fund), rather than rely solely on external consultants or UCCEE. This format will enable focused direction and coordinated projects, which will bring value and reduce repetition with existing or previous projects and research.

46. In June 1999, the subprogramme commenced the energy management and performance related energy savings scheme (EMPRESS) project. This also utilises GEF funding and is helping to establish specialised energy service companies that provide monitored and targeted energy services to industrial and commercial clients. This energy saving technique helps end-users to achieve and maintain energy efficiency improvements through careful analysis of metered energy consumption data. It is being implemented to establish commercially-viable Energy Service Companies (ESCOs) based on the monitoring and targeting (M&T) concept, in three to five countries in Central and Eastern Europe.

(d) Regionality

47. Many areas of Africa remain unelectrified, particularly outside the main centres. The energy subprogramme has prioritised Africa with activities having been carried out in at least 13 African countries over the last three years. Activities have also included other developing countries or States in transition, namely, at least 17 countries in Asia, Latin America, Central and

^{5/} For Instance, After Rio: Prospects and Challenges, UNDP, 1997.

Eastern Europe and Small Island Developing States. One regional study has been undertaken in the Andean Region, and another is about to commence in the Pacific islands. A list of countries in which projects have been undertaken is set out in Table 1 below^{1/} .

48. A number of African countries (e.g. Ghana and Zimbabwe) have been the recipient of more than one activity. UNEP's prioritisation on Africa has coincided with a general decline in Overseas Development Assistance (ODA) funding for development and environmental projects. UNEP has thus been able to bring about empowerment which otherwise would not have been forthcoming particularly on issues related to negotiations on the UNFCCC targets and protocols.

^{1/} This list is not exhaustive

Table 1: Countries where UNEP energy subprogramme projects have been undertaken

<u>Africa</u>	Botswana	<u>Eastern and Central Europe</u>	Azerbaijan
	Burkina Faso		Estonia
	Egypt		Hungary
	Côte d'Ivoire		Poland
	Czech Republic		Romania
	Ghana		Slovakia
	Kenya		
	Mauritius	<u>Latin America</u>	Argentina
	South Africa		Brazil
	Uganda		El Salvador
	United Republic of Tanzania		Ecuador
	Zambia		Guatemala
			Peru
	Zimbabwe		
		<u>Small island developing states</u>	Barbados
<u>Asia</u>	India		Pacific island countries
	Indonesia		
	Philippines		
	Viet Nam		

49. A number of the projects undertaken by UCCEE have provided important information transfer on climate change issues critical to Africa. They include:

- (a) Cooperative implementation of climate change projects;
- (b) Clean development mechanism in Africa;
- (c) National communications support programme; and
- (d) Economics of greenhouse gas limitations projects.

50. While it is not possible to qualify the exact results of the projects (i.e., which Governments acted upon the information, and in what manner), it is possible to say that the information made available in these projects would probably not have been available otherwise to the recipients at this critical stage of negotiations (1996 to 1999). The type of information disseminated as a result of these projects was targeted to enhance recipient countries' knowledge of the issues surrounding the climate change negotiations, although the evaluator has not verified how the information was acted upon.

51. It is believed that the UNEP projects in Africa have provided timely and targeted information on climate change issues (GHG mitigation analysis, Kyoto implementation mechanisms, etc.). In doing this, UNEP has developed a

distinctive role in, and reputation for, facilitating investment in renewable energy and energy efficiency programmes in the region, and has fulfilled the priority areas relevant to energy, as approved at the Nineteenth Session of the Governing Council.

52. Projects in other regions have been on a more ad hoc basis, and it seems that their success has more often been dependent upon the competency of local partners. CDM-related activities undertaken in Asia and Latin America which have built upon existing activities in Africa (e.g., cooperative implementation of climate change projects, national communications support programme, and the economics of greenhouse gas limitations projects) have also produced successful results. The success of the project currently being undertaken in Eastern and Central Europe (M&T) is also largely reliant on the choice of a good contractor who is able to achieve the desired results.

53. Africa should continue to be a priority region for the UNEP energy subprogramme. When the subprogramme considers projects outside this region, decisions should be based upon a set of criteria which, whilst allowing certain flexibility, also assist in streamlining activities. Regional decision criteria could include weighting the answers to questions such as those posed in Table 2, below

Table 2

LIST OF POSSIBLE QUESTIONS TO BE RESOLVED BEFORE SELECTING ACTIVITIES TO UNDERTAKE - PARTICULARLY IF OUTSIDE A PRIORITY REGION

- | | |
|-----|--|
| 1. | What is the "value added" for this project which outweighs its regional non-conformity? |
| 2. | Does this project provide a lead in facilitating the development of clean, efficient energy systems in this country? |
| 3. | Is it replicable? |
| 4. | Does it enable SMEs to participate and grow? |
| 5. | Does it showcase cost-effective financing of clean, efficient and renewable energy technologies? |
| 6. | Is there a contribution to institutional investor confidence in renewable energy and energy efficiency projects? |
| 7. | Does it provide a framework for possible future CDM and JI investments? |
| 8. | Will Governments, local authorities, regional networks and/or industry participate and act upon the results and recommendations? |
| 9. | Are the partners able to produce a result larger than the sum of the individual parts? |
| 10. | Does it provide training and capacity-building to deal with sustainable development, and the development and implementation of CDM projects? |
| 11. | Does it facilitate clean, sustainable, efficient energy services, suited to the needs of the users? |
| 12. | Are the partners credible and able to deliver quality results? |
| 13. | Is it value for money? |
| 14. | Does it lend itself to additional funding from other sources? |

3. Energy subprogramme

54. The energy subprogramme has kept abreast of changing UNEP policy towards energy and the environment, and has remained relevant in a global context. The projects considered generally reflect knowledge about the key drivers for sustainable energy production and the role which UNEP can take uniquely. Recent initiatives also leverage objectives and projects of other TIE units, notably production and consumption, and the economics and trade units. There are some, however, which deviate, and which perhaps should not be subprogramme projects, for example:

(a) Capacity-building on technological and economic integration of wind energy and other relevant renewable energy technologies into the electricity systems of Pacific Island Countries (PICS), CP/2200-99; and

(b) Implementation of renewable energy technologies projects - opportunities and barriers, CP/2200-98-02.

55. The rationale for this statement is that these two projects do not strengthen the subprogramme's concentration on facilitating intensified efforts by governments and industry to formulate sustainable energy policies and develop technologies for production and use of energy in an economically efficient and environmentally sound manner, etc. The first project is a good bilateral technical assistance project, and one that fills a need in the region. The second project does not necessarily add value in a substantial manner. Analysis of the barriers and opportunities for RETs has been undertaken by at least 5 major studies funded by various organizations (e.g. EC, UNDP, ADB, German Agency for Technical Cooperation (GTZ) etc.) during the 1990s. A number of the studies have included Zimbabwe and Egypt. On the basis of extensive experience in the region over the course of 20 years, it would seem that most Governments in Africa are aware of the barriers and opportunities. The challenge is to overcome the barriers and implement projects and this is the aim of the subprogramme and its CDM-related projects.

56. There will always be more opportunities for projects than the budget allows. The subprogramme needs to be decisive about which projects it supports and in which countries these are undertaken. Based on the foregoing discussions in Section A, it is recommended that the subprogramme prioritizes Africa and continuing projects which facilitate the provision of clean, sustainable, efficient energy services, suited to the needs of the users. This consideration needs to be incorporated into energy planning for national and regional projects as a matter of course, and includes energy planning in non-energy sectors (e.g. healthcare, education, industrial development, etc.). It is also a major consideration for the successful implementation of future Kyoto mechanisms.

4. United Nations Collaborating Centre on Energy and the Environment

57. UCCEE is supported by UNEP, the Danish Ministry of Foreign Affairs, through DANIDA, and Risø National Laboratory. This support commenced in 1990, and was reiterated in the memorandum of understanding of December 1994. The aim of RNL is the further technological development in the three main areas of energy, environment and materials. Established in 1958, Risø is a state institution under the Danish Ministry of Research and Technology. It has a staff of more than 900, of which one third are scientists.^{8/}

58. UCCEE was established within RNL as a research and technical support unit, which could operate independently supported UNEP energy and environment projects. It supports UNEP "in pursuing its aim of incorporating environmental aspects into energy planning and policy world-wide, with special emphasis on developing countries".^{9/} UCCEE also undertakes projects for other organizations including other United Nations organizations,

^{8/} The European Association of Renewable Energy Research Centres (EUREC Agency), Expertise Guide 1998.

^{9/} UCCEE site <http://www.uccee.org>

bilateral agencies, and collaborates with other partners, including those in the private sector (e.g. EC-funded projects)^{10/} .

59. UCCEE has supported the energy subprogramme in its work with the FCCC since its inception. This has included assisting in the preparation work for the third assessment report (TAR) within Working Group III of the Inter-governmental Panel on Climate Change (IPCC), as lead authors in the TAR, and assisting in the preparation of other IPCC special reports.

60. UCCEE disseminates information on UCCEE projects and publications from its comprehensive website.

61. During the period 1996 to 1998, UCCEE provided 90 per cent of the operational support to the Energy subprogramme, with substantial co-funding provided by DANIDA. Short-term external consultants accounted for the other 10 per cent. The programme was managed by Mrs. Aloisi de Lardarel who was the de facto officer in charge. When Mr. Radka and Mr. Usher joined the subprogramme in 1998 and 1999, their technical expertise led to projects being initiated and directed from UNEP itself. The benefit of this has been to ensure that the objectives and direction of the projects undertaken in the Subprogramme truly reflect the priorities of UNEP. Without criticizing the projects commenced prior to 1998 it is noted that:

(a) By bringing technical energy expertise to UNEP, the priorities and projects undertaken by the subprogramme change to reflect such experts' understanding of how to achieve the Subprogramme's goals; and

(b) The priorities of Risø and Danida may not always be those of UNEP.

62. As part of the memorandum of understanding, a management and policy committee (MPC) was established to oversee the operations of UCCEE and to set proprieties. The committee is made up of one member from each of the three joint participating organizations (Danida, Risø, and UNEP), with the representative from UCCEE as secretary. Following recommendations from a 1994 review of UCCEE, a scientific advisory panel (SAP), composed of experts from mainly developing countries, was established. Its role is to provide guidance to UCCEE, and it is usually convened twice a year. In 1998, a new SAP was initiated. It currently has nine members (Pachauri, Karekezi, Sokona, Suarez, Bauer, Tirpak, Yi, Parakh, and Thomas Johansson).

63. During the operational period, January 1998 - December 1999, the funding for UCCEE was provided primarily by Danida and RNL (71 per cent and 19 per cent respectively). The funding being negotiated for the period January 2000 - December 2001 increases the funding from \$2,500,000 to \$2,624,000 for the operational period (approximately a 5 per cent increase). The Environment Fund has provided a one per cent increase in its funding, bringing its yearly support up to \$300,000, or around 11 per cent of the total budget.

64. All three organizations concerned have benefited mutually from this association, and have worked together for the last nine years in a spirit of cooperation and goodwill. Whilst the projects undertaken by UCCEE on behalf of UNEP have not always adhered to the objectives of the subprogramme, neither have they compromised its integrity. For an 11 per cent financial contribution, UNEP has received more than 11 per cent of the attributed acknowledgments - rather good leverage in itself.

65. A comprehensive internal review of projects undertaken by UCCEE between 1996 and 1998 (particularly those related to climate change and GHG mitigation) would be useful. The aim would be to:

(a) Verify the usefulness of projects and their deliverables in influencing target groups (e.g. governments, local and regional authorities, networks, industry), and/or in providing them with information to assist them in making informed decisions;

^{10/} Minutes of the meeting of the SAP, December 1998

(b) Review, in depth, the lessons learned from these projects, and use them to build up the programme; and

(c) Recommend the most appropriate monitoring and evaluation systems in order to evaluate future activities.

B. Efficiency and effectiveness of subprogramme objectives

66. The objectives of the energy subprogramme, as launched in 1996, are:

(a) To promote energy-efficient technologies and policies, and the use of energy resources with low environmental impacts;

(b) To catalyse the incorporation of environmental principles in energy sector analysis;

(c) To analyse the environmental and social impacts of institutional restructuring in the energy sector; and

(d) To assist developing countries to implement environmentally sound energy policies in line with climate change issues, whilst helping them to identify opportunities arising from international conventions and negotiations^{11/} .

67. These objectives are similar to those of a number of other United Nations agencies. It is their interpretation and implementation which makes UNEP's contribution to energy and the environment unique.

1. Evaluation problems encountered

68. One of the problems encountered in undertaking this evaluation was the lack of comprehensive information on the projects. Not all the project documents for the period 1996 to 1999 have been available. It appears that there are three possible repositories for them (Nairobi, Paris and Risø), with no one part of the organization having executive responsibility for maintaining the record archive. It is recommended that the Paris office be responsible for all documentation from 1996 onwards. This will assist in the effectiveness of future evaluations.

69. It seems that no review has been carried out to quantify the success of projects undertaken since 1994, including projects undertaken by UNEP sub-contractors or UCCEE. The lack of monitoring and evaluation has made analysis of the efficiency and effectiveness of the subprogramme more difficult.

70. Most of the projects undertaken from 1996 to 1998 have been managed by UCCEE. This was due to lack of permanent staffing within the subprogramme until September 1998. Since then, a number of projects have been initiated within the energy subprogramme itself. The UCCEE maintains an essential function in supporting the subprogramme.

71. In view of the above points, this evaluation is simply based upon the successful achievement of physical project targets, not on the social and policy deliverables (as these are not quantifiable). Annex II contains a list of projects from 1996 to the present, and provides data upon which this evaluation is based. The data shows that all projects have performed the tasks specified (e.g. workshops, publications, reports, etc.).

C. Quality and utility of subprogramme outputs

73. Given the information available, it is impossible to substantiate overall subprogramme outputs and results in terms of their application to, and influence on, governments and other agency programmes and projects. The research undertaken for this evaluation does indicate, however, that the projects completed to date have all:

^{11/} Source: UNEP website - Division of Technology, Industry and Economics, Energy and OzonAction Unit, Energy, updated 1 June 1999

(a) Achieved their deliverables (e.g. workshops, publications) in a professional manner, in keeping with the profile of UNEP;

(b) Contributed positively to capacity-building and the exchange of information on sustainable energy issues, particularly on the issues of GHG emissions and the new implementation mechanisms of the Kyoto Protocol;

(c) Promoted implementation of global environmental considerations.

74. What is less certain is whether they have catalysed the incorporation of environmental principals in energy sector analysis or analysed the environmental and social aspects of institutional restructuring in the energy sector.

75. There are two main findings from the research undertaken into the value of the publications:

(a) The publications need wider publicity: The publications are currently distributed by UCCEE. RNL and UCCEE use their databases and websites for distribution and publicity. The only publicity at present is via the website, the E2C2 newsletter or word of mouth. It seems that this is about to change, with the UNEP book distribution firm taking over this responsibility from UCCEE. UCCEE will continue to supply developing country contacts with the publications, free of charge, but the UNEP distribution centre, which is based in the United Kingdom of Great Britain and Northern Ireland, will handle other enquiries and publicity. It is important to absorb these publications into mainstream UNEP distribution, as it will:

- (i) Relieve UCCEE from servicing general enquiries regarding the publications;
- (ii) Reach a wider audience;
- (iii) Be a more cost-effective mode of distribution;
- (iv) Be a statistical monitor of demand for the publications.

Other relevant databases, such as those held by other areas of TIE, should also be utilized for distribution of the publications;

(b) The publications are of variable quality and value: The material contained in the publications is, generally, of a high standard and very relevant to the topic. There are instances however, (such as discussions on the value of renewable energy projects with a view to greenhouse gas mitigation, in the current Country Series), which would benefit from outside peer review.

D. Organizational Structures

1. Structure

77. For clarity, this section has been divided into three sections: structure, funding and staffing.

78. During 1998, there was a restructuring of UNEP. The Energy subprogramme was moved to the newly created TIE Energy and OzonAction Unit. The rationale behind this was the perception that the OzonAction Programme, which acts as focus for UNEP's Montreal Protocol activities, and is the focal point for ozone reduction information globally (providing services to industry, Governments and other stakeholders in developing countries), would provide a road map for UNEP's energy activities. OzonAction's work supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition, and promotes good management practices and use of energy, with a focus on atmospheric impacts. Using this model, future energy subprogramme's work in support of the FCCC could be expanded to undertake accreditation, monitoring and evaluation of projects implemented under the Kyoto Protocol mechanisms.

79. A new mission statement and strategy is being developed for the energy subprogramme. When finalised and approved internally, this will give further clarity and direction to the UNEP position on energy.

80. There are two other units within TIE that could increasingly interact with the energy subprogramme in the future. These are the Economics and Trade Unit (based in Geneva) and the Production and Consumption Unit (based in Paris).

81. The TIE Economics and Trade Unit promotes the use and application of assessment and incentive tools for environmental policy and helps improve the understanding of linkages between trade and environment and the role of financial institutions in promoting sustainable development. This unit initiated the financial institutions initiative to draw the attention of the financial services industry to environmental concerns. By signing the statement by financial institutions, bank lenders commit their organizations to incorporating environmental considerations into internal and external business activities. The work being undertaken within the "Promoting Private Sector Financing of Commercial Investments in Renewable Energy Technologies and Energy Efficiency" project complements this initiative. Informal discussions are held regularly between the Economics and Trade Unit and the energy subprogramme in order to coordinate and strengthen both programmes.

82. The TIE Production and Consumption Unit fosters the development of cleaner, safer production and consumption patterns that lead to increased efficiency in the use of natural resources and reduction in pollution. It has five subprogrammes, three of which are particularly relevant to energy: cleaner production, tourism and sustainable consumption. In January 1999 discussions commenced with the GEF secretariat about a possible project to strengthen the energy component of the CP programme by working through the UNIDO/UNEP network of national cleaner production centres. This idea developed greatly in July during the visits of the head of the Indian centre and formal submission to GEF is planned during 1999.

83. There is also synergy and increasing interaction with the tourism subprogramme. Tourism is a key economic sector in many developing states, and increasingly involves issues of sustainable energy supplies.

84. It is recommended that these discussions and joint activities with other UNEP TIE units and subprogrammes are continued and strengthened, as such activities are mutually beneficial and contribute to the understanding of energy as a cross-cutting issue for all areas.

(a) Other UNEP interactions

85. Energy issues affect all spheres of life. Sustainable energy options should be considered as a matter of course in the development of all projects and programmes. The implementation of sustainable energy policies is therefore fundamental to the achievement of UNEP's overall mission. As a result, it is recommended that there should be inter-programme dialogue. For instance, energy is a crosscutting issue for natural resources ñ atmosphere, land and water programmes in particular. There was no indication of energy being considered as a matter of course in the documentation and websites of these three programmes. Within the World Climate Impacts and Response Strategies Programme (WCIRP), the main thrusts include:

(a) Testing methodologies for assessment of impacts of climate change and sea level rise;

(b) Promoting and improving coordination of national climate impact and response strategies programmes;

(c) Improving techniques for making inventories of sources and sinks of GHGs;

(d) Developing national strategies for responding to climate fluctuations and change;

(e) Improving dissemination of accurate, complete and timely information to governments and the public; and

(f) Assessing air quality and air pollution mitigation strategies.

85. Energy generation, distribution, transportation and usage impact on all of these. Similarly, work being undertaken on AIJ and GEF country studies are also impacted by energy usage, government policies and regional strategies.

(b) External interlinkages

86. Through its work, the energy subprogramme has established good linkages with a number of organizations, both government and private, in developing countries. These are national (e.g. the southern centre in Zimbabwe) and regional (e.g. AFREPREN in Kenya) in nature, and have provided the subprogramme with valuable information and local support. Such interlinkages should be developed further, and funding sourced to support this. The benefits would be two-way:

(a) Assisting in capacity-building at a local and regional level; and

(b) Ensuring the relevance of subprogramme projects to local needs and issues.

87. Interlinkages are being formed with the private sector, particularly financial institutions. The subprogramme, through its recently initiated projects with financial institutions and informal collaboration with the finance and insurance initiative, is gaining credibility with the financial sector. This could be strengthened to facilitate investments in sustainable energy projects in developing countries and countries with economies in transition.

88. Important interlinkages could be strengthened with multilateral financing organizations, such as the World Bank and the regional development banks. This could have a number of two-way benefits, including:

(a) Introducing sustainable energy considerations into mainstream lending (for example, see Annex III);

(b) Providing appropriate leverage on existing projects and funding;

(c) Strengthening governmental recognition of the importance of cross-cutting sustainable energy and environmental policies; and increasing lending for sustainable energy projects, thus providing an example to the private sector.

89. During 1999, the subprogramme has participated in meetings hosted by a number of other agencies. These include both policy-type discussions and project participation. Dialogue has been held with UNDP, UN-DESA, UNF, IEA, GEF, etc.

90. To state the obvious, care must always be taken to collaborate with institutions and organizations on projects which bring credibility to the subprogramme and which can achieve tangible results.

2. Funding

91. The funding allocated to the energy subprogramme has varied over the nine years since its inception. During the early 1990s, core funding was much greater than it is today. In 1996, core funding to UNEP itself was reduced, which was reflected in the energy subprogramme. In 1997, the subprogramme budget was reduced substantially, but in 1999 it was almost doubled from the previous year. This has naturally affected the ability of the programme to deliver its objectives (which has also been influenced by lack of UNEP-based staffing).

92. It is recommended that UNEP expands its programme on renewable energy and energy efficiency. This will naturally require additional funding. Part of this should come from core UNEP funding from the Environment Fund. Other funding must be sourced from Governments and the private sector. This should

not be in competition with other United Nations agencies (e.g. UNDP, UNIDO) but should stand by the merit and uniqueness of its proposed activities.

93. The energy subprogramme has two GEF co-funded projects underway. The GEF Medium-Size Project is providing funding for promoting private sector financing of commercial investments in renewable energy technologies and energy efficiency. The project on establishing monitoring and targeting ESCOs in Central and Eastern Europe is funded by a GEF project development fund. It is anticipated that funding from the GEF via these routes will continue and that the current strategic partnership negotiation between UNEP and GEF will provide an additional envelope of funding which could be accessed by the energy subprogramme.

94. It is also recommended that the subprogramme leverage other United Nations agencies and private funding as appropriate. Possible collaborators in future projects include the United Nations Foundation, the United Nations Development Programme Sustainable Energy and Environment Division (UNDP SEED), the World Bank and private organizations.

95. Government trust funds, targeted to specific projects, are another possible source of increased finance for the subprogramme, as are government-supported staff provided through the Junior Professional Officer Programme. There are precedents in other units and programmes for increased leverage of both of these sources of support.

3. Staffing

96. Until 1998, when Mr. Mark Radka was appointed Energy Programme Coordinator, the only person directly involved within UNEP was Mrs. Jacqueline Aloisi de Larderel, who managed the overall programme. Projects were undertaken by either UCCEE or external consultants. The UCCEE has around 16 members of staff from the United States of America, Europe and mainly from developing countries.

97. In 1999, an energy expert, Mr. Eric Usher, was hired by UCCEE to assist Mr. Radka with developing the programme and strengthening UNEP's links with UCCEE. This is the first time since 1994 that there have been two persons active on an operational level. This is already having an effect in terms of increased activity, and in achieving a higher profile both within the organization and externally.

98. In 2000, a programme officer is expected to be appointed to the subprogramme. Review of applicants is due to take place shortly.

99. The Federal Republic of Germany has recently agreed to support a Junior Professional Officer (JPO), to assist the energy subprogramme. A new JPO has just commenced her initial two-year term. It is suggested that other countries be approached for funding of similar positions. In such a way, the activities of the subprogramme could be expanded at minimal staff cost to the Environment Fund.

100. In the longer term, it is recommended that additional permanent positions be created within the energy subprogramme in order to ensure the quality and continuity of its programmes. It is also recommended that the employment procedure for these be streamlined, in order to:

(a) Shorten the time between application, selection and commencement of employment; and

(b) Allow for flexible employment opportunities (e.g. secondment to and from other organizations or departments).

III. PROBLEMS AND CONSTRAINTS ENCOUNTERED

101. Despite difficulties encountered, the energy subprogramme has been successful in achieving substantial results (as discussed in previous

sections). The following subsections highlight the problems that were faced in the development and execution of programmes.

A. Programme and project development

102. Until recently, the lack of permanent staff has hindered the subprogramme. This has been reflected in the inability of the subprogramme to set its own agenda, to maintain its own records, and to learn from past experiences and projects. This in no way reflects upon the overall management of the subprogramme, but rather its lack of permanent staff aside from one manager.

103. There is a new impetus in the subprogramme. Mrs. Aloisi de Larderel is fully supported by her new staff, and they have put new energy and direction into the subprogramme over the last ten months or so.

104. UCCEE has been the cornerstone of the energy subprogramme and indeed, for many years, it conducted UNEP's only projects. UCCEE has supported the energy subprogramme in the achievement of its goals, and there is no reason to believe that it will not continue to do so. The funding which is made available through UCCEE by Danida has been vital for the majority of Energy subprogramme projects, especially during the downturn in funding for the 1996 to 1998 financial years. It is not clear how influential Danida or RNL have been in setting the agenda for UCCEE projects. There appears to be no inherent conflict of interest between the three collaborating organizations.

105. Monitoring and evaluation systems have not, however, been developed satisfactorily to supervise and control the subprogramme, particularly the projects undertaken by UCCEE. Future projects must have quantifiable success criteria built into the programme. For instance, the holding of a conference does not, in itself, constitute a success criterion. Rather, what the participants learned and how they used the information is of greater importance in this context. Such successes were apparent, particularly as related to UNFCCC strengthening activities in Africa, but it is currently not possible to quantify these (except by visiting the countries involved and interviewing co-participants in subprogramme projects, an action outside the remit of this evaluation). The implementation of a monitoring and evaluation system should overcome this problem for future evaluators.

B. Management

106. Even though staffing levels are still not high enough to achieve the profile and results recommended, they have increased from one to four over the past ten months. Two permanent staff members are not sufficient to achieve the results and profile desired by the subprogramme. However, a small core team of experts, supported by outside consultants and UCCEE, should be able to bring about the desired changes in the short to medium term. Such a structure would be impeded at present by the slow bureaucracy within UNEP, which has made it difficult to create and fill new permanent positions.

107. Similarly, the contracting of external consultants should allow for periods longer than six months, if applicable, although it is recognized that this is a condition of the United Nations system and not specific to UNEP. Other United Nations organizations have overcome this constraint in the field of energy.

108. Difficulties are presented by having shared administrative functions between Nairobi, Paris and Risø. Obtaining the documentation required to undertake this evaluation was an excellent demonstration of the disarray of the record and reporting system. One part of the organization should have overall responsibility for the recording and archiving of all subprogramme documentation.

C. Inter-agency and intergovernmental cooperation

110. Many other United Nations organs and agencies, such as UNDP, UNESCO, UNIDO and the GEF, have activities on sustainable energy. To date there have

not been many interactions between these and UNEP, primarily due to low staffing levels within the energy subprogramme.

111. The energy subprogramme has similarly not been interactive with bilateral agencies and development banks, primarily for the same reason.

112. Intergovernmental cooperation has occurred on a number of projects and has been very positive. There is inherent rivalry, however, between a number of agencies, due to the requirements for external project funding. This illustrates the necessity of creating a unique role for UNEP's energy activities, which bring additional value and/or leveraging to the activities of other organizations.

IV. LESSONS LEARNED

A. Programme and project development

113. The lessons learned with regard to the development of the programme and individual projects include the following:

(a) The most "added-value" has come when project recipients have been fully engaged in the process and are committed to implementing or acting upon its results and recommendations. Projects which have included local organizations and Governments in the entire process of the project, rather than as the final audience, have usually achieved the most tangible results. Consultation with relevant local organizations whilst a project is being formulated has also tended to ensure that the project focuses on their needs;

(b) There are some instances where projects have replicated work already undertaken. New projects must build upon existing results, expertise and work, to recreate the wheel. This can be achieved through sharing and disseminating information, reviewing work already undertaken by other organizations before planning new programmes, and concentrating on core project and geographical areas;

(c) This targeted approach to project development and geographical coverage is essential. Focused projects which build upon past achievements do more in terms of capacity-building than a scatter-gun approach (trying to be omnipresent). The same applies to geographical distribution of projects. A tight mission statement and five year strategy, and a structured decision-making process can assist in achieving this.

(d) There are a variety of possible partners for every project. Discretion in choosing which organizations to partner with is essential:

- (i) In order to deliver quality results. It is not always possible to know which new partners are the most appropriate or who will provide the best results. Consulting with existing expert networks can often provide valuable information about players who are new to the subprogramme, and avoid mistakes; and
- (ii) To increase in-country expertise, by using a variety of local support organizations, as appropriate, for different projects.

(e) The global market for energy generation, transmission and supply is changing. Environmental issues, such as the targets and mechanisms of the Kyoto Protocol, will have an increasing impact, even for rural electrification projects in developing countries. The subprogramme has kept abreast of these changes and has shown leadership in providing vital capacity-building and information transfer on climate change issues.

(f) New projects must have clearly defined objectives and deliverables, and a system of reporting which allows quantifiable evaluation of the project. A standard monitoring and evaluation system needs to be implemented for all subprogramme projects including both those undertaken at

UCCEE, and the Paris office. Otherwise, it is not possible to verify results accurately or to build upon successes as confidently as possible.

B. Management

114. The main lessons on management from this evaluation are that:

(a) Administrative procedures must be streamlined and centralised. Administrative staff need to be constant, and within the physical confines of the operations, if possible;

(b) Without adequate staffing (both in terms of numbers and technical expertise), the subprogramme will only achieve limited results;

(c) Strong collaborative links with external organizations can be mutually beneficial. Such is the case of UCCEE, which is supported by RNL, Danida and the Energy subprogramme. This situation has occurred because there are no inherent conflicts of interest or policy, there is trust between the partners, control of the programme rests with the contracting body (even if it does not provide the bulk of the funding), and a high quality of external work and good reputation is maintained. Such collaboration enhances the reputation of all organizations.

C. Inter-agency and intergovernmental cooperation

115. There are not many lessons to be learned from this area, due to the low level of inter-agency collaboration over the past three years. New interlinkages are being forged, however, with other United Nations agencies (e.g. UNDP, DESA etc.), and it is anticipated that these will be mutually beneficial. One example of this collaboration is the United Nations Inter-agency Task Force on Energy for the ninth session of the Commission on Sustainable Development which commenced in 1999. Approximately eight United Nations organizations are participating, sharing knowledge and resources. This has begun to cover energy issues wider than just those related to the CSD, which should mean greater cooperation and information flow on energy between participants in the future.

116. Other lessons learned:

(a) Inter-agency and inter-departmental cooperation must be based upon common goals and synergies. Successful examples for the subprogramme, which are being built upon, are provided by the Production and Consumption Unit and the Trade and Economics Unit of UNEP. New relationships which are being built with other organizations (both United Nations and others) can be critically important for the development of future successful projects.

(b) Not all Governments are keen to implement project results or recommendations. In order to maximise information transfer, projects must be focused, result orientated and targeted to the needs of the audience at all times.

V. RECOMMENDATIONS

117. Global environmental problems are increasingly a motivator for international funding agencies. The provision of clean energy services, suited to the needs of the user, is a fundamental element which must be incorporated into energy planning for national and regional projects as a matter of course. This includes energy planning in non-energy sectors (e.g. healthcare, education, industrial development etc.). This analysis must include environmental considerations, as well as 'best fit' technology and economic considerations. Such expertise must be inherent in relevant organizations within the private and public sectors.

118. Linked to this is the evolving need to ensure that projects implemented under mechanisms such as the CDM, support investments in long-term sustainable energy developments. There is a danger that only short-term, or expedient solutions which use old technology, will be considered. This is a particular danger for the countries of Africa, where GHG emissions are some

of the lowest in the world, and where most of the unelectrified areas are sparsely populated, often low income, and in rural locations.

119. The energy subprogramme is uniquely placed to take a pivotal role in promoting mainstream consideration of sustainable energy solutions and sound investment decisions for energy technologies in developing countries. In doing so, it will be contributing to the overall mission of UNEP.

The following recommendations are based upon:

- (a) Review of past achievements;
- (b) Knowledge of the energy sector globally;
- (c) Desire to place the subprogramme in a unique position in relation to the activities of other agencies and organizations in facilitating sustainable energy solutions; and
- (d) The need for an operational structure which will enable the desired activities and results.

1. Formalize mission statement and strategy

120. It is important to agree upon and publicise the role that the redefined energy subprogramme will take on globally as quickly as possible. Once this has been achieved, new priorities and targets can be set and focused upon, and these can be communicated externally to avoid possible duplications (especially within the United Nations system). It is recommended that whilst keeping a degree of flexibility to respond to new opportunities in the future, priority areas in terms of geographical spread of projects and their focus, are maintained. There will always be more opportunities for the subprogramme than budget or resources allow. Formalization of the above will assist with assessment of these opportunities.

2. Develop stronger inter-linkages with other UNEP units, United Nations agencies, and other organizations.

- (a) Investigate interlinkages with other programmes (e.g. natural resources). This should assist in making sustainable energy options considered as mainstream in all UNEP projects and programmes;
- (b) Continue to promote efficient use of energy through existing infrastructures, consistent with the TIE cleaner production approach;
- (c) Increase participation in the tourism subprogramme (particularly collaborating on clean energy systems for tourist developments in developing countries) and in the insurance finance initiative; and
- (d) Increase leveraging in outside programmes, such as:
 - (i) Other United Nations organs and agencies. In particular, there seem to be synergies between the UNEP and UNDP positions on sustainable energy. It is recommended that possible areas of collaboration be explored, particularly within UNDP SEED and the Initiative on Sustainable Energy (ISE);
 - (ii) World Bank group (particularly International Bank for Reconstruction and Development (IBRD) and International Finance Corporation (IFC)) with regard to rural electrification projects;
 - (iii) Regional development banks, initially the African Development Bank. This would concentrate on rural electrification projects;
 - (iv) European Union (e.g. the Synergy and INCO programmes, programmes of the Environment Directorate, and new initiatives of DG I);
 - (v) International Energy Agency (IEA). It could be very productive for UNEP to assist the Development Assistance Committee of the Organisation for Economic Cooperation and Development (OECD) (aid

ministries) to ensure that sustainable energy options are considered and implemented as a matter of course in bilateral projects and programmes. Another entry point could be participation in the IEA's Photovoltaic Power Systems Agreement's Task IX, which is about to commence. This will look at addressing principally non-tech barriers to building up appropriate infrastructures to enable large-scale photovoltaic deployment in developing countries;

- (vi) Bilateral agencies. This could include cooperation with projects led or co-funded by bilaterals and direct support to the programme;
- (vii) Private organizations (e.g. financial institutional and intermediaries). Care must be taken here that there are "joined up" objectives that are common to both organizations, and that the private organization is an appropriate partner for UNEP.

3. Strengthen funding mechanisms

121. A small budget achieves small results. A small energy budget with small results are the profile for the period 1996 to 1999 for the energy subprogramme. The situation would have been significantly worse without the financial support provided by Danida and RNL to UCCEE. The situation is not in keeping with UNEP's mandate to provide leadership and encourage partnerships in caring for the environment by inspiring, informing and enabling nations and people to improve their quality of life without compromising that of future generations, or the scope of these recommendations.

122. In order to undertake many of the recommendations, and to allow the subprogramme to fulfil UNEP's mission on energy to the full, the budget given to the subprogramme through the Environment Fund must continue to increase. At the same time, a revised programme needs to be developed taking into account additional staffing requirements, new programme areas, and the results which are required. Once these are developed, additional funding could be leveraged through:

- (a) Continued and expanded use of GEF small and medium sized grants;
- (b) Acting as intermediary between other financial institutions and possible project partners (e.g. similar to the M&T project);
- (c) Country funding of additional staff (such as programme officers, junior professional officers, support staff etc.). It is recommended that these positions have at least a two-year tenure in order that they may assist knowledgeably in the execution of the programme;
- (d) Country trust funds for specific projects (e.g. sustainable transport). Other areas of UNEP receive a considerable portion of their budget in such a manner. This is often preferable for donor countries to contributing to a general budget; and
- (e) Private co-funding opportunities, without compromising the integrity of UNEP.

4. Continue to give priority to assisting the countries of Africa

123. The larger developing countries, such as China and India, are receiving and will continue to receive substantial international assistance in developing capacities for negotiating within the UNFCCC, and for developing sustainable energy projects. There are a number of large renewable energy projects already underway in both countries. The smaller countries of Africa do not receive such attention. UNEP should continue to focus on them, building on the programme strengths to date.

124. Small Island Developing States (SIDS) are also important, as they are some of the worst and most immediately affected by any change in sea levels. There are a number of organizations which are vocal in bringing the plight of SIDS to international attention (e.g. Alliance of Small Island States - AOSIS). Many international agencies have already responded. It is therefore recommended that the energy subprogramme's main thrust be through its collaboration with the tourism subprogramme of the Production and Consumption Unit, which already has a focus on sustainable energy for SIDS. The good relationship which has already been developed by these two subprogrammes can be strengthened to assist in bringing sustainable energy solutions to the fore in tourist developments in SIDS. This is an area which has not been developed in any substantive manner by other organizations.

5. Streamline administration

125. The administration for the subprogramme must be central to its operations. It is recommended that the Paris operation becomes responsible for all subprogramme documentation and that this is filed in an easily accessible manner.

126. Standard monitoring and evaluation systems must be implemented to supervise and evaluate the subprogramme properly. This includes projects undertaken by UCCEE and from Paris. Future projects must have quantifiable success criteria built into their reporting structure.

6. Become a clearing house for sustainable energy technologies

127. There is great need for a global co-ordinating centre for sustainable energy projects, policies and publications, not only to avoid duplication, but also to make information available easily. This is particularly true for energy projects at the periphery, i.e. outside the main urban and industrial centres in developing countries, for which centralised electricity generation is the norm. To date, access to relevant information is often by chance, on the internet or through a publication, rather than from a "one-stop shop" on environmentally sustainable energy technologies. This action would have particular value for Governments in developing countries, and those organizations wishing to implement projects there.

(a) Inter-agency committee on sustainable energy

128. There are many useful projects, funded by the United Nations and bilateral organizations, which address sustainable energy for rural areas. There are also many lessons which can be learned from these. An inter-agency committee was active during the early 1990s, but ceased to function a year ago. In 1999, an inter-agency task force on energy for the ninth session of the Commission on Sustainable Development was implemented. This is coordinated by the United Nations Department of Economic and Social Affairs (UN-DESA) and there are currently around eight participant organizations, including UNEP. It is recommended that, should UN-DESA not wish to continue with this function after the ninth session of the Commission on Sustainable Development, the energy subprogramme should coordinate an informal inter-agency committee on sustainable energy, in order for the United Nations agencies to exchange information on their energy projects and programmes.

(b) Expand the programme to include sustainable transport

129. Transport is one of the largest energy issues for developing countries, particularly with regard to degradation of the environment. It is recommended that the Energy subprogramme increases its activities in this field. This would require discrete funding for project work and expert staff due to the specific technical nature of transport and to make sure no duplication occurred with other programmes. It is recommended that specific country funds are sought to address this important sector.

(c) Provision of experts

130. It is recommended that UNEP facilitate the provision of experts for reviewing rural electrification and fossil fuel projects in developing countries in the initial stages. They would provide expert advice on

possibilities for renewable energy technologies within the project, and the effect of the project upon the environment. Although such projects already undergo an environmental assessment this would go further in relation to climate change, as well as local environment and development issues.

131. It is recommended that an expert be seconded, through UNEP, in the African Development Bank, or to assist in creating a sustainable energy division within it (the precedence being ASTAE within the World Bank). This expert or division would review national rural electrification plans at the early planning stage and advise on environmental effects and sustainable energy issues. There are many such projects currently underway. Annex III lists those that are currently calling for tenders in the World Bank's Development Business. Funding could be through national country pledges (similar to the Dutch Government's funding for ASTAE). The expert or division could also be available to national Governments to assist them in formulating policies related to sustainable rural electrification. This would build upon and complement the policy and capacity-building work undertaken by UCCEE in Africa.

132. A third recommendation is the establishment of centres of environmental reference for Africa, building upon existing national or regional centres. This would enhance capacity already in place in many African countries and would provide state-of-the-art information, and a database of experts, publications, other reference centres, etc. Ideally, this programme would also include the placement of African experts in Europe for tenures, to develop their knowledge and international linkages, and to enhance national and regional capacity in Africa.

133. Renewable energy and energy efficiency expertise is not as comprehensive at UCCEE as climate change expertise. It is therefore recommended that an expert database be set up for renewable energy experts. There are a number of ways in which this could be established, one being along the lines of the UNDP/UNOPS website where interested firms enter relevant data. This can then be accessed as required. The DACON system used by the development banks (including ADB and IBRD) whereby firms are able to register online, is also very extensive. Neither of these databases specialise in renewable energy or energy efficiency experts, and there would be immense value for UNEP, and other United Nations organizations, if this were established as a first point of reference. Experts sought would include those suitable for undertaking consultancy work such as due diligence for the financial sector, technical experts to assess renewable energy technology options; experts in climate change scenarios; sustainable transport, etc. This would strengthen in-house expertise and would allow the programme to operate with minimal staff, calling upon experts as required.

- (d) Expand upon assistance to financial sector with regard to facilitating renewable energy projects

134. It is recommended that the subprogramme expand upon experiences in, and results from, current projects, notably the ones on the establishing monitoring and targeting of ESCOs in Central and Eastern Europe; and promoting private sector financing of commercial investments in renewable energy technologies and energy efficiency. These projects are uniquely positioned to assist in overcoming some of the barriers to financing and implementing sustainable energy and energy efficiency systems. They are also expandable and replicable.

- (e) Provide expert sources aligned to the introduction of CDM and JI for quantifying GHG emission abatements, etc.

135. The exact nature of this role will evolve as the negotiations on the three implementation mechanisms are finalised. A good start has been made through UCCEE's activities to date. This expertise needs to be expanded, however, to deal with the problems inherent in establishing small-scale electricity generation projects using renewables which do not displace large amounts of GHGs. Such applications are clean, green, and cost-effective compared to the fossil alternatives, and match supply with demand. They can

provide income generation at a local level, both directly (manufacture, installation, etc.) and indirectly through the provision of electricity (e.g. for small-scale cottage industry), as well as contribute to the health and well-being of local communities (e.g. provision of fresh water at the village, lighting for homes and schools, etc.). These factors must be taken into consideration in order for renewables to take their rightful place in the CDM and JI, and not be excluded on GHG emission basis.

- (f) Continue capacity-building activities, with increased emphasis on expanding local expertise (RETs, CDM, etc.)

136. The work already undertaken in Africa to disseminate information to Governments on the CDM, AIJ, JI and other UNFCCC requirements has been very valuable. It is highly recommended that this continues and expands. It is an understatement to say that developing countries need continued access to state-of-the-art information in order to support significant expansion of their involvement in the process of the Kyoto Protocol. Additional capacity-building is required, particularly to facilitate further development of national inventories, programmes and reporting, and to provide background information on which to base new negotiations on appropriate technology transfer.

137. Part of this capacity-building will assist developing country organizations regarding renewable energy technologies (resource in their own country, technology and market status, economics, applications etc.). As the implementation mechanisms are negotiated at a government level yet are required to be implemented by the private sector, it is recommended that activities are targeted to add value to both the private and public sectors in developing countries. It is anticipated that many of these activities will be undertaken jointly with other organizations (private as well as other United Nations agencies, etc.).

138. As a logical extension of this work, UNEP may be in a position to undertake, coordinate or direct the emissions certification of future CDM, emissions trading and JI projects. This will be a fundamental process in the successful delivery of these mechanisms. The OzonAction programme may provide a valuable roadmap on the evolution of this enabling activity.

7. Publications

139. The publications are an important output of the energy subprogramme. It is recommended that the UNEP publishing house be made responsible for their distribution with the mandate to publicise them more widely. This fits in with the overall aim of providing a 'clearing house' function on sustainable energy information.

140. It is also recommended that an outside "peer review" of all recent and planned publications be undertaken in order to verify their usefulness.

141. This evaluation was undertaken by Jenniy Gregory, Market Development Manager, IT Power, as contracted by UNEP Nairobi on 8 July 1999. The views expressed herein are those of the author, after consultation with persons and organizations as identified in Section I. Neither the author nor IT Power accept any liability for actions taken as a result of this report.