INTRODUCTION

Background

In September 1979, a group of African researchers met in Arusha, Tanzania under the auspices of the Commonwealth Science Council. The main objectives of the meeting were to share their experiences and to explore the feasibility of establishing a regional programme of research and development activities on renewable energy technologies and their application in Africa. The meeting, which identified seven projects to form the basis of collaborative research projects in the region, led to the formal institution of the African Energy Programme (AEP) by the Commonwealth Science Council (CSC). In addition to the AEP, similar initiatives were launched by other national and international bodies to promote and harness the enormous renewable energy potential of Africa.

The AEP aims to promote work on the African continent in the field of renewable sources of energy and to co-ordinate and strengthen the African scientific and technical capabilities through cooperative activities. The Programme is concerned mainly with addressing the energy needs of the predominantly rural populations of Africa with the following eight projects forming the nodal points for collaborative research and development:

1. Biogas for rural development
2. Energy policy for planning
3. Resource assessment
4. Solar crop drying
5. Solar heating and cooling
6. Wind electricity generation
7. Wind water pumping
8. Wood/charcoal production and utilisation.

The major activities of the AEP fall into three broad categories:

1. National scientific research and technological development as part of a regional network.

2. Workshops whose main objectives are:

   - to provide training to developing country scientists in the techniques and methodologies for high quality scientific research;

   - to identify common areas for follow-up training through collaborative scientific research and technological development;

   - to provide fora for the interchange of ideas and comparison of scientific results and information derived from the application of common methodologies.

3. Training courses and fellowship attachments.

The common theme underlying all activities is to assist with the development of indigenous scientific and technological capability around common disciplines and methodologies.

The United Kingdom Overseas Development Administration (ODA) has provided substantial financial support to initiate research and development activities on three of the projects: Solar crop drying, Charcoal production and utilisation and Biogas systems. Activities in the other projects have been pursued through national programmes and a number of training workshops organised by the Commonwealth Science Council. The range of projects has been instrumental in demonstrating the practicability of a regional network approach to science and technology for development within the constraints of scarce human and institutional resources.

The International Conference on Research and Development of Renewable Energy Technologies in Africa was organised to offer the opportunity for the scientists working on the AEP to share their results and experiences with each other, as well as with colleagues working on similar problems elsewhere in Africa and other countries. The specific objectives of the Conference were:

- to report the results of research projects on renewable energy technologies in Africa covering both the activities of the African Energy Programme and those of other institutions/agencies;

- to provide an opportunity for international exchange of research ideas and information between African scientists and colleagues from elsewhere;

- to provide a forum for scientists and potential donors to explore modalities for future collaboration on energy research and development in Africa.

Organisation and management

The Conference took place at the Paul Octave Wiehe Auditorium of the University of Mauritius from 25-29 March 1985, and was attended by 100 scientists, researchers, policy makers and representatives of International Organisations from 30 countries.

The programme consisted of plenary technical sessions which discussed invited and submitted scientific papers under four generic schemes of **Resource Assessment; Energy Conversion Technologies; Energy Utilisation Technologies; Energy Policy** and **Planning and International Collaborative Programmes**. In all, about 70 papers were presented at the Conference. In addition, visits were organised to the Bagasse-fuelled power station at Champagne and the Renewable Energy Projects of the University of Mauritius.

The Conference was officially opened by His Excellency Sir S Ramgoolam, Governor-General of Mauritius. The Inaugural address was delivered by the Hon A K Gayan, Chairman of the Council of the University and Minister of External Affairs for Mauritius. Professor J Manrakhan, Vice-Chancellor of the University of Mauritius delivered the keynote address to the conference. Dr P Hutchinson, Deputy Secretary of the Commonwealth Science Council, welcomed the Conference delegates on behalf of the Secretary-General of the Commonwealth and the Chairman and Secretary of the Commonwealth Science Council.

Conclusions and recommendations

1. Organisation of the AEP

Since its inception, the African Energy Programme activities have covered a number of fields concerning energy resources. Some activities had been more successful than others. However it was clear that the Programme had fulfilled a need, and should be carried on and expanded.

Such expansion should, in the first instance, be in the inclusion of non-Commonwealth African countries. The attendance at the Conference of representatives from these countries already initiates such a step.

Representatives of the International Organisations outlined their various activities in the field of energy, emphasising thus the advantage of close co-operation between the various agencies within a single system or network. The UNEP representative indicated that his organisation was considering a round table meeting of agencies concerned with energy. The suggestion was noted that a full time Secretariat would be beneficial, though the difficulties of acquiring funds for this were noted.

2. Technical development

1. Exchange of information

The need for exchange of information was strongly expressed. It was mentioned that there was, perhaps, too much information available. However, the difficulties of exchanging the information had often led to the duplication of effort. What was required was a system for organising and selecting the information as well as the means for delivery to and between the scientists and engineers.

Several organisations had made a start, for example, the Solar Energy Society for Africa had come into being, and frameworks also existed with the African Network for Scientific and Technological Institutions (ANSTI) and the African Energy Commission. The UN agencies were also interested in becoming involved in information systems for energy.

The conclusion was clear that the time was ripe for an African Energy Information System.

2. Application of technology

There was consensus that sufficient scientific and technological knowledge had been accumulated in many aspects of Energy for the balance of effort to be tipped towards the aplication of the knowledge to development.

It was important that several avenues for implementation be investigated. These range from governmentally-sponsored schemes to those which were purely commercial. In the latter case, the involvement of entrepreneurs, manufacturers and sales people from the start of any project is important.

It was considered that it was insufficient merely to present to the public devices for the utilisation of energy. It was important to create a demand, for example, for dried products, which in turn would provide a demand for the implements.

3. Training

The need for appropriate training was expressed. Some courses already exist in the developed countries. However, the development of such courses within the region would be useful.

Not only was there a need for graduate training, but training of support staff at technician level was also a requirement.

4. Priorities

1. It was recognised that countries would each have their own priorities as far as the various aspects of energy utilisation were concerned. In general, though, Biomass utilisation, particularly that through biogas generation, and the design of solar appliances was well advanced. Two areas specifically mentioned requiring further work were pyrolysis and collection of solar and wind energy data.

2. Co-operative action, both on an organisational level between agencies, and by information exchange was seen as an essential way to optimise the effort which was going into the development of energy.

3. Taking the results of research and development to energy aplication through the medium of commercialisation was seen as the next major step forward.

4. Training at all levels, and by several means, was, as always, seen as an essential output.

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