

REGIONAL BIOMASS PROJECT

ASSESSMENT AND TRAINING

FINAL REPORT

June 2004

*SOPAC Miscellaneous Report 569*



## EXECUTIVE SUMMARY

There is a growing awareness that renewable energy (RE) in general and biomass energy in particular, are finally entering a new era in the 21<sup>st</sup> Century. The biomass industry is now moving from a technology-driven phase to a market-led phase with a combination of social, economic, environmental and market forces now at the core of biomass energy.

Despite the growing understanding internationally of the critical role biomass energy could play in ensuring future supplies of sustainable energy, there are still major general constraints to further the utilisation of biomass energy in Pacific Island Countries (PICs).

These include:

- difficulties with data collection on biomass resources;
- institutional barriers;
- local hesitance in accepting new technologies, partly because of economic reasons and lack of local technical skills;
- lack of financial resources e.g. many biomass energy projects do not fall within the conventional investment criteria;
- lack of follow-up support, after sale services, and marketing problems;
- lack of a clear vision of the role of biomass energy by many institutions; and
- lack of maturity of many biomass energy technologies e.g. high costs of RE, low costs of fossil fuels particularly taking into account that these prices do not reflect, in the majority of cases, the environmental costs.

Biomass energy is a sector where a number of opportunities could be developed which would in turn help to improve the provision of energy services and also contribute to energy security for the PICs in particular providing an opportunity to reduce the current heavy reliance on fossil fuels.

## INTRODUCTION

This report is being submitted to the Perez-Guerrero Trust Fund (PGTF) for Economic and Technical Cooperation Among Developing Countries Members of the Group of 77 as part of the reporting procedure for the Pacific Regional Biomass Assessment Project. The report is the final of a series of reports for the implementation of the above project. A financial disbursement report is attached as part of this report.

## PROJECT IMPLEMENTATION

The project *Regional Biomass Assessment – Phase One: Training and Assessment* was implemented by the South Pacific Applied Geoscience Commission (SOPAC), through its Community Lifelines Programme. This project was made possible through funding received through the PGTF and the Government of the Republic of China/Taiwan. The Government of New Zealand through the SOPAC Small Energy Projects Programme provided additional funding.

There were two components to this project. The first component involved training of country nationals in biomass assessment techniques and methodologies, while the second component focused on identifying and quantifying the biomass energy resources in six Pacific Island Countries namely, Fiji, Kiribati, Samoa, Tonga, Tuvalu and Vanuatu. This involved an assessment of the current and future levels of biomass resource supply and demand in these countries, and an evaluation of the environmental, social and economic sustainability of the biomass supply.

### **Participating Countries**

The total funds available restricted the number of participating countries to six, hence careful consideration was given to the selection of these six participating countries. Specific emphasis was given to selecting countries based on the three main island groupings of Micronesia, Polynesia and Melanesia, geographical locations, size of the islands and resource endowment. The countries that were finally selected include: Fiji, Kiribati, Samoa, Tonga, Tuvalu and Vanuatu. It was anticipated, based on the success of this initial phase, and dependent on funding availability, that the other remaining countries not able to be included should be considered in a second phase.

### **Activities**

The following section provides a detailed account of the activities performed.

#### *(a) Development of Training Material*

The set of the biomass resource training materials were developed after consultation with the SOPAC Community Lifelines Programme and relevant stakeholders at the country level, by Imperial College, London. The consultation process took place during the first three months of the implementation period and involved a visit to all the participating countries to ascertain

critical issues pertaining to the development and utilisation of biomass energy resources in each country.

*(b) Training*

The training in Biomass Resources Assessment in all six participating countries was carried out during the month of May and June 2003. The Consultants from Imperial College Centre conducted the training for Energy Policy and Technology (ICCEPT), with support from Sustainable Resource Management (SRM) and staff of the SOPAC Community Lifelines Programme.

In most cases the training participants were drawn from institutions, NGO's and women's organizations, which would potentially be responsible for formulating/implementing, or facilitating thereof, projects identified during the training course. Participants' project ideas were further explored in the "Poster Presentation" sessions.

The lectures were delivered using the country studies and training manual which had previously been made available to the participants on the ICCEPT website. The salient features of these documents along with further reference material were highlighted in a comprehensive set of slides for each of the topics/subjects being addressed. The slides were supplemented by detailed lecture notes and papers which were photocopied and distributed to participants, along with a CD ROM (prepared and distributed by SOPAC) containing all the resource material presented during the course.

Field visits were also arranged to biomass project sites to evaluate the status of biomass resources available and current uses and to enable participants to discuss with the resource persons potential projects.

An evaluation of the training course by course participants revealed that the lectures were clear and easy to understand, and their content relevant to the course. The lectures were enhanced by the use of visual aids and were effective in enhancing the participants' understanding of the subjects and topics. The participants were given opportunities to ask questions and discuss issues of interest.

*(c) Reports*

The following reports have been produced by the consultants and are available on-line in the ICCEPT website <http://www.iccept.ic.ac.uk> :

- (a) Individual country biomass resource assessment profiles;
- (b) A synthesis report of the biomass resources in the six participating countries;
- (c) A master development plan for the biomass resources in the six participating countries; and
- (d) A biomass resource assessment training report.

## **FUNDING**

The total funds provided by PGTF were Thirty-four thousand US Dollars (US\$34,000.00). The consultancy fee paid to Imperial College was One Hundred and Thirty-five thousand, Four hundred Fijian Dollars (F\$135,400.00 – equivalent to about US\$63,000.00). Additional funds to off set the shortfall in the consultancy fee paid to the Imperial College were provided by the Government of the Republic of China/Taiwan and supplemented from the SOPAC Small Energy Projects Programme (NZAID).

## **CONCLUSION**

For the six countries covered under this project, the consultants identified some common problems inhibiting the utilisation of biomass energy. Most notable is the difficulty associated with the collection of biomass energy data. Unlike conventional energy sources, the collection of biomass energy data often involves a multi-disciplinary approach that requires specialist knowledge. The lack of economic and technical support provided to biomass energy projects is also seen as a major barrier. The financial mechanism available for energy projects is usually biased against biomass energy projects. Similarly, the lack of follow-up support - post installation in terms of maintenance, repair, marketing and management usually contribute to the failure of the project. In the Pacific there is a tendency for energy projects to be promoted from the perspective of the technology as opposed to the demand for the energy services. This dilemma has contributed a lot to the failure of projects as the technical aspects are generally beyond the capability of the average person in the community.

The project has brought about awareness and a renewed interest in biomass as a potential energy source in PICs. Interestingly, participants were able to identify small-scale biomass energy projects that could be implemented at community level with the minimum of capital outlay. On the other hand, there have been some projects identified that would require a

certain level of government support in terms of funding, institutional support and infrastructure development to ensure their viability and sustainability.

Building on the biomass resource assessment project, SOPAC, in collaboration with Imperial College, has prepared a funding proposal for a second phase. Primarily, the second phase will look at the establishment of a regional taskforce and country-based biomass energy task forces to promote the use of biomass energy in the region. SOPAC is also seeking resources to carry out training in biomass resource assessment in other PICs that did not participate in the first phase of the project.

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***Attachments (available from the SOPAC Secretariat on request)***

1. General Overview of the Training Course
2. Synthesis Report – The Biomass Resources of, Kiribati, Fiji, Samoa, Tonga, Tuvalu and Vanuatu
3. Financial Disbursement Report