An analysis of the SIDS experts meetings

Introduction

Through the University of the West Indies Center for Environment and Development (UWICED), the United Nations Development Program (UNDP) Capacity 2015 program has sponsored four Small Island Developing States (SIDS) experts meetings in 2003. These were:

- capacity building for renewable energy and energy efficiency in Small Island Developing States, held at the Matavai Resort, Niue from 7 to 11 July 2003;
- the vulnerability of Small Island Developing States: Enhancing Resilience, the role of the Private Sector, Civil Society and Trade in the Sustainable Development of Small Island Developing States (SIDS, held at Fort Young, Roseau, Dominica, from 29 September to 3 October 2003;
- waste management for Small Island Developing States: enhancing cooperation among SIDS for their sustainable development, held at Hotel Nacional, Havana, Cuba, from 27 October to 1 November 2003; and
- capacity building for sustainable development through training, education and public awareness, held at the University of the South Pacific Laucala Campus, Suva, Fiji, from 3 to 8 December 2003.

A common factor for all of the meetings were that they all arose from the report on the Alliance of Small Island States (AOSIS) brainstorming session held in Belize in December 2002. Furthermore, the structure of the meetings all followed the same principles: case studies and concept papers were presented and discussed, and a formal set of recommendations were elaborated on that basis. The meetings were also fairly small in size, but were nevertheless representative of the various SIDS regions. There was also a fair balance between government representatives, regional organizations, non-governmental organizations and academia. Local participation was also greatly encouraged, and this apparently enriched the discussions.

The expert meetings allowed for a frank discussion of the sustainable development problems of SIDS. It is evident from some of the recommendations that there was a willingness to try new approaches, and to be somewhat more direct than what is usually seen in the inter-governmental process. That being said, a number of very innovative technologies were analyzed in all the meetings, and cooperative arrangements were also pursued.

Some key outcomes of the expert meetings

1. The SIDS University Consortium

The SIDS University Consortium has been an issue for discussion since it was first raised in the context of a UNDP sponsored vulnerability workshop. In that setting the issue was largely the lack of SIDS professionals engaged in vulnerability work, and the need for the SIDS universities to play a more active role in this regard.

The matter was taken up at the Suva meeting, and an agreement was developed by which the University of Malta, the University of the West Indies, the University of the South

Pacific and the University of the Virgin Islands would form a core group to develop the practical aspects of their cooperation in the consortium. UVI would act as coordinator. The ideas surrounding the consortium are to maximize the in-house academic expertise of SIDS as a group, as well as to expand on the available training and educational opportunities available to SIDS students at these institutions. A student at USP would be able to have access to economics and trade courses at the University of Malta without traveling there. In addition the consortium can be used to promote other sustainable development activities such as cultural enterprise and exchange.
The consortium will also ensure that SIDS academics and professionals will have a new network for career development that would make it possible to remain within the SIDS regions and not seek advancement in metropolitan countries.
Several ancillary benefits were also explored, such as the use of the consortium in technology development and adaptation. This could have a great deal of benefit within the climate change context.

2. The scavenger well

The scavenger well technique was discussed during the Cuba meeting. Scavenger-well couples represent an inexpensive, practical solution for the long-term development of fresh groundwater by controlling the upward advance of saltwater, markedly improving and sustaining freshwater recovery. By abstracting water from above and below the interface simultaneously, scavenger wells provide the only known hydraulic formula for stabilizing the interface. By setting specific pumping rates above and below the interface, hydraulic gradients develop within both freshwater and saltwater regions of the aquifer, promoting horizontal flow lines to well screens and maintaining interface equilibrium by slight differences in water density.
Fresh groundwater lenses located in the shallow subsurface environment of oceanic carbonate islands and atolls throughout the Pacific represent the only naturally occurring potable water supply. The groundwater lenses have formed from rainfall percolating through the soil and vadose zone, and reside in fragile hydrodynamic equilibrium with the underlying saltwater, separated by slight differences in density. During prolonged drought and increased demand for fresh drinking water, the lenses become thinner and the sustainable withdrawal of fresh groundwater is limited by saltwater contamination.
A pilot project is currently being implemented in Majuro, Marshall Islands, in an area where it has been proven that it is impossible to sustain a freshwater extraction scheme that does not result in saltwater contamination. These are very shallow wells, and it has been shown that the scavenger well technique is able to be sustainable. Linking the scavenger well effluent pipe to a reverse osmosis pump also increases the yield of the well and this is also being pursued.
There was a great deal of interest generated in this project and in the technique. A larger scale project is likely to be developed after the initial demonstration project has been completed in Majuro.

3. Anaerobic fermentation

Also at the Cuba meeting there was discussion about the anaerobic fermentation approach to waste management. Waste management is a growing problem for all SIDS, due to a lack of appropriate facilities, a lack of space and increasing pressures from urbanization,

industry and tourism. Poor management practices such as simple open landfills are eyesore, they contaminate the reef, and they also occupy precious land resources. What the meeting concluded was that a new approach to waste was needed, one that views waste as a resource through integrated waste management. A key component in this could be played by anaerobic fermentation, a simple process that can be applied to the household, community or town levels.

4. A SIDS energy agenda

The Niue meeting fittingly took up the call from a pre-CSD9 AOSIS workshop to begin developing and implementing a new SIDS energy agenda. Several aspects were highlighted in this regard, such as the need to establish a Sustainable Energy Network for SIDS, whose functions would include:

- The provision of information on best practices
- Assistance in identifying external technical and financial support
- Access to expertise, through a roster of experts
- Support for the development of demonstration projects
- Support for Public Education and Awareness
- Assistance with the development of sustainable energy policies
- Capacity development
- Facilitate the exchange of information
- Assistance with curriculum development

The meeting also recommended the development of a Renewable Energy and Energy Efficiency Centre (REEEC) on the Internet. Its role would be to provide a support and training resource to help awareness and education of policy decision makers in the public and private sectors, and leaders of Civil Society. It would also assist energy experts and planners in identification of technological options and provide estimate of costs and benefits of sustainable energy systems. There are also links to the universities consortium through the call to develop Tertiary Education Capacity in Renewable Energy and Energy Efficiency.

5. OTEC

Also at the Niue meeting, the technology of Ocean Thermal Energy Conversion was discussed. The oceans cover almost 71% of the world and act as solar energy collector and storage, especially in the tropic region. This available thermal energy, which is replenished every day by the sun, represents a tremendous pollution-free energy resource for human civilization. Ocean Thermal Energy Conversion (OTEC) technology refers to a mechanical system that utilizes the natural temperature gradient that exists in the tropical ocean between the warm surface water and the deep cold water, to generate electricity and produce other economically valuable by-products such as large quantities of fresh water, nutrient rich water to support aquaculture, fertilizer production and cold water for process cooling or air conditioning buildings. The science and engineering behind OTEC has been studied in many countries such as the United States, Japan, Britain, Netherlands, etc. for many years. OTEC has been demonstrated to produce electricity, drinking water and many other co-products. Many OTEC by-product subsystems have been tested, advanced and reported to have fruitful results. OTEC requires relatively low operation and maintenance costs and NO fossil fuel consumption.

Since the oceanic thermal resource in not intermittent, OTEC systems can be operated at full capacity around the clock and consequently make maximum use of its capital investment. The tropical ocean thermal reservoir is the largest renewable energy resource in the world. It is large enough to potentially replace fossil fuel and supply all of human society's energy needs in perpetuity. However there is no field demonstration of a reasonable size integrated OTEC system yet.

Through the expert meeting process the following key objectives have been agreed to by the proponents. There are five priority objectives for assessing the various OTEC systems:

1. To determine if OTEC technology has reached the level of maturity to reliably provide electric power, fresh water, and/or air conditioning to a tropical island community as well as support for such other uses as aquaculture, agriculture, and ice production.
2. To define the economic conditions under which tropical island based OTEC systems are viable in comparison to conventional fossil fuel based systems.
3. To assess the pre-feasibility of multi mega watt plants in developing countries
4. To determine if the technology is available to produce significant quantities of liquid hydrogen using electricity produced from an OTEC process on floating platforms in the ocean.
5. To recommend a strategy for OTEC development and immediate follow-up actions.

But a lot of progress has been made. Based on deep-water simulation research in Japan, any negative environmental impacts can be prevented by designing the pipeline system that will return the outflow from the OTEC plant to the appropriate ocean depth that coincided with the temperature of the combined water outlet from the plant. For example a 10 megawatt plant using the Uehara cycle would have an output of about 29 tons per second of water at about 23 degrees Celsius, and about 30 tons per second at about 10 degrees Celsius. The combined outflow would be about 59 tons and at a temperature of about 16 degrees Celsius. Based on its temperature and depth profiles for many SIDS, the return pipe would be placed at a depth of between 350 and 400 meters. However this has to be demonstrated before OTEC will be given a positive Environmental Impact Assessment.

While there is great interest at the policy level and among the sustainable development community in SIDS regarding OTEC there is not the same degree of interest by the leadership of electric utilities. The leadership of the electric utilities is a highly sceptical about endorsing new technologies, and unlikely to endorse any technology until it has been proven and they can get hard performance reliability and cost data. If the new energy technology is to be considered as the base load capacity then the leadership become even more demanding about the data. The best way to convince this critical segment of the SIDS professionals is by having OTEC plant in commercial scale operating under conditions similar those in their country.

One of the defining social characteristics of SIDS is the limited scientific and technical capacity, in order for this not to be an obstacle against commercialization. It will be necessary for the development of specially designed initiatives to help these countries to

develop the capacity to effective management of this technology. One possible option will be through collaboration between Japan and the regional universities in the Caribbean and the Pacific such as the University of the West Indies and the University of the Southern Pacific respectively.

6. Coral reef protection and restoration

Through the Cuba meeting, Tom Goreau of the Global Coral Reef Alliance was able to gain a greater exposure for his coral reef restoration techniques. Global warming poses the most immediate threat to both living and non-living coastal resources of small island nations. Yet the focus of policy makers has largely been on sea level rise that will take many times longer to become serious in most places. Melting of glaciers and ice caps will require centuries to thousands of years, and will take several decades to severely impact most tropical islands. However global warming has already devastated the coral reefs, fisheries, tourism, and shore protection of almost all small island states, and is likely to deliver even more crippling blows in the next few years.

Goreau has established projects in the Maldives and in Indonesia which served as models for what could be achieved with limited funding and dedicated staff. The process is based on the knowledge that when a weak electrical current is passed through metal in seawater, crucial nutrients for coral reef growth separate out, and can be easily taken up by growing reefs. A structure in metal is placed near the shore, and live corals are transplanted onto the frame. A current is then passed through, either from solar panels or from the mains. The technology can be adapted to a variety of uses, be they coastal protection, crustacean hatcheries or fish nurseries. It also provides for an increase in viable coral reef spawn. Local materials can be utilized, and the electrical source is flexible.

As a concrete outcome there is now a proposal to establish several pilot artificial reef projects in Viti Levu, Fiji's largest island. Seven possible project sites have been selected, five of which are part of the locally managed marine areas, an initiative supported by the University of Rhode Island Coastal Research Center. This project recognizes the critical role women play in all forms of SIDS development in their role as hunter/gatherer of the family's food. Goreau will be in Fiji later in the year to discuss this project further. The project is conducted with the collaboration of UNDP Capacity 2015, the Government of Fiji, and the University of the South Pacific (USP) School of Marine Studies. The involvement of the USP is to allow students to take the idea back to their countries when they finish their studies and expand this knowledge and experience.

7. Inter-regional cooperation

The meetings all called for increased inter-regional cooperation. At present the Alliance of Small Island States acts as an ad-hoc coalition, and does not have full formal recognition within the international community. It may the de facto preeminent organization for SIDS, but this has limited acceptance outside the UN. A major outcome from all the meetings has been the clear message that for SIDS to have a more concerted approach in the international arena, as well as better coordination for optimizing the exposure of SIDS issues, a formalized AOSIS needs to be established.

A further recognition was given to the very valuable role that SIDSNet is and could be playing for dissemination of information and sharing of experiences and expertise. This

support needs to be translated into requests to the international community for assistance, given the current financial situation of SIDSNet.

8. Education for sustainable development – coral reefs program

The Ocean Futures Society have developed an impressive tool for public awareness raising and for education for sustainable development. Their coral reefs program is an inventive way of describing the forms and functions of the coral reef to students and non-scientists, by comparing the feeding activities and inter-actions between species as to those that occur on land in a small town. The educational program is intended to assist SIDS with domestic education on coral reef protection, conservation and sustainable use. The program is being targeted at 12 Pacific Island Countries, chosen because the initial initiative had originated with University of South Pacific (which has 11 satellite campuses in Pacific Island Countries). The program would involve a video tape in the local language, mostly narrated by a local hero (sports star, TV personality, etc). The video would utilize the same footage for each island, focusing on the view of the coral reef as an integrated ecosystem operating much like a village or town. The interest of the Ocean Futures Society is to expand the scope of the project to include all AOSIS Members, while cognizant of the need to undertake further fund raising for this to succeed.

Aspects that were not covered by the expert meetings

As with any such process, it would be impossible for the expert meetings to cover all aspects relating to the processes that the meetings set out to cover. Nevertheless, without prejudice to the management decisions that were taken, the following issues could be given attention in future meetings.

1. Niue meeting

A revolutionary approach to using coconut oil as a diesel substitute is being implemented in Port Vila Vanuatu. If combined with the new coconut oil extraction methods in the Cook Islands, the potential for this fuel source could be very great. Unfortunately, it was not possible for the relevant personnel to attend the Niue meeting.

2. Dominica meeting

The Caribbean approach to the WTO negotiations was to establish a regional negotiating machinery, with participation from all CARICOM member states. This would have been a valuable case study for the meeting.

3. Cuba meeting

While many technological solutions were discussed, there was little discussion on what could be done to overcome institutionalized intransigence. A major problem for many SIDS is that waste managers are not trained in new techniques, and have inherited methods from colonial times, which were based on expedience and not environmental standards. A discussion on the social and cultural aspects of waste management, and on ways and means of addressing these within projects would have been a helpful addition.

4. Fiji meeting

The Fiji meeting could have considered some existing public awareness programs, and evaluated these for their effectiveness. There are some examples through the climate change projects in the Caribbean and Pacific regions. In addition the program run by the Ministry of Environment in Mauritius is robust. Lessons learned from an analysis of these processes would have been helpful.

Next steps

The series of expert meetings has clearly tapped into a rich source of information for SIDS. The format has worked remarkably well, and the results have greatly assisted the negotiators. Further work on strengthening the negotiating skills, to assist SIDS delegates to better utilize this sort of expert information is expected to be a key feature at the SIDS negotiations skills workshop in Cape Verde later in 2004.

It is understood that a further series of meetings will also be commissioned. For further success it will be important to ensure that there is significant buy-in from the SIDS delegations and that the UN system takes an active engagement in supporting the process.