Institute for
Global Environmental Strategies
2108-11 Kamiyamaguchi, Hayama, Kanagawa
240-0115 Japan
TEL: +81-46-855-3700 FAX: +81-46-855-3709
E-mail: iges@iges.or.jp URL: www.iges.or.jp

■**Tokyo Office**
Nippon Press Center Bldg. 8F
2-2-1 Uchisaiwai-cho, Chiyoda-ku, Tokyo
100-0011 Japan
TEL: +81-3-3595-1081 FAX: +81-3-3595-1084

■**Kansai Research Centre**
IHD CENTER 3F
1-5-1 Wakinohamakaigan-Dori, Chuo-ku, Kobe
Hyogo, 651-0073 Japan
TEL: +81-78-262-6634 FAX: +81-78-262-6635

■**Kitakyushu Office**
Kitakyushu International Conference Center 6F
3-9-30 Asano, Kokurakita-ku, Kitakyushu
Fukuoka, 802-0001 Japan
TEL: +81-93-513-3711 FAX: +81-93-513-3712

■**Project Office in Bangkok**
c/o UNEP-RRC.AP, Outreach Bldg. 3F, AIT
P.O. Box 4, Klongluang, Pathumthani 12120,
Thailand
TEL: +66-2-524-6441 FAX: +66-2-516-2125

Executive Summary

FACILITATING ADAPTATION TO CLIMATE CHANGE IN THE SOUTH PACIFIC REGION

– BRIDGING RESEARCH, POLICY, AND IMPLEMENTATION

Institute for
Global Environmental Strategies (IGES)

International Workshop on

FACILITATING ADAPTATION TO CLIMATE CHANGE IN THE SOUTH PACIFIC REGION – BRIDGING RESEARCH, POLICY, AND IMPLEMENTATION

AND

Introductory Seminar on

CLEAN DEVELOPMENT MECHANISM IN THE PACIFIC ISLAND COUNTRIES – ISSUES AND CHALLENGES

Executive Summary

International Workshop on
FACILITATING ADAPTATION TO CLIMATE CHANGE IN THE SOUTH PACIFIC REGION – BRIDGING RESEARCH, POLICY, AND IMPLEMENTATION

AND

Introductory Seminar on
CLEAN DEVELOPMENT MECHANISM IN THE PACIFIC ISLAND COUNTRIES – ISSUES AND CHALLENGES

Co-organized by:
Institute for Global Environmental Strategies (IGES), Japan
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Denmark

Co-hosted by:
Secretariat for the Pacific Regional Environmental Programme (SPREP), Samoa

Co-Sponsored by:
Ministry of the Environment, Japan
Government of New Zealand
Australian Greenhouse Office

12-14 October 2004
SPREP Training and Education Centre
Apia, Samoa

Table of Contents

Note: This summary was prepared by Dr. Ancha Srinivasan, Principal Researcher and Manager of the Climate Policy Project at IGES. The report does not necessarily constitute an endorsement by the Institute for Global Environmental Strategies (IGES) or the other co-organizer, co-host and co-sponsors of the Workshop.

Key Points of Consensus and Recommendations

1. Participants confirmed the importance of **adaptation to climate change as a key component of sustainable development programs** in Pacific Island Countries (PICs) and encouraged a **practical, proactive approach to mainstreaming** considerations of climate variability and change into community-based (bottom-up) projects and programmes and as well as national level policies (top-down approaches).

2. Participants highlighted the importance of a **utilizing a collaborative, participatory approach that effectively engages and empowers communities, churches, civil society, businesses and government ministries** in shared efforts to develop effective adaptation solutions that are appropriate to a given place and the people who call that place home.

3. Participants called for **greater efforts to integrate traditional knowledge and practices** in the evaluation of climate risks and the development of adaptation projects, programs and policies.

4. Participants encouraged **recognition that climate adaptation will address problems on a continuum of timescales** from extreme events through year-to-year variability to long-term climate change and that effective solutions require **consideration of climate in a multi-stress, multi-sectoral context**.

5. Participants emphasized the need to **strengthen the linkages between adaptation science and policy formulation** including:
    - Translation of scientific results into understandable and useful information products;
    - Development of a regional database of vulnerability assessment findings and adaptation projects and focused efforts to share lessons learned;
    - Enhancing access to emerging tools, technologies and methods for climate vulnerability assessment and comprehensive risk assessment programs; and
    - Enhanced programs of education and public outreach.

Overview

The Pacific Island Countries (PICs) are highly vulnerable to climate change and sea-level rise and often experience extremely damaging climate-related events (tropical cyclones, droughts, floods, etc.). Their heavy reliance on the productivity of one or two economic sectors (fisheries, tourism, etc.) that are highly sensitive to climate and external global pressures (fluctuations in demand for export commodities, flow of capital, etc.) exacerbates their vulnerability further. Adaptation to climate change and integration of pragmatic adaptation policies in national development planning is, therefore, crucial.

The natural ecosystems and the people of the Pacific are inherently resilient and developed mechanisms to cope with the major changes in natural, social and economic conditions in the past. Ironically, these countries contribute least to the problem of climate change but they are expected to suffer the most, and need to adapt faster than others. Current adaptive capacity, however, may be inadequate to address the timing and magnitude of impacts suggested by some projections of climate change. The overriding priority need for the PICs is for enhancing the capabilities of communities, governments, businesses and civil society to respond to the challenges presented by climate change including the transfer and assimilation of technologies that support adaptive responses to climate change. However, currently there is inadequate understanding as to the most appropriate adaptation response strategies, let alone the most appropriate ways and timetables for implementing them.

The International workshop on "Facilitating Adaptation to Climate Change in the South Pacific Region – Bridging Research, Policy and Implementation" provided a forum for frank discussions in an informal setting on various issues including climate scenarios and implications, climate change impacts, local coping strategies, national adaptation policies, and approaches for mainstreaming climate change adaptation in development planning. A discussion to prioritize needs and challenges for the region was facilitated. A half-day session on exploring opportunities for Clean Development Mechanism (CDM) in the region was also held subsequent to the adaptation workshop.

The workshop brought together 56 people from 18 countries including 12 South Pacific [American Samoa, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Niue, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu] and 6 others [Australia, Denmark, Japan, Malaysia, New Zealand, and USA]). The participants included policy makers, senior and middle-level managers of national governments engaged in adaptation/CDM, researchers from universities (Ibaraki University, University of the South Pacific, University of Waikato) and other scientific institutions (NIWA, East-West Center), representatives from two inter-governmental (SPREP, SOPAC) and two international (UNDP, UNEP) organizations, and officials from two development aid agencies (JICA, AusAID) and two international NGOs (WWF, International Red Cross and Red Crescent Societies).

There was consensus among the participants that adaptation to climate change is of high priority in the region. The adverse impacts of climate change and sea level rise were already being felt in several countries, and current and future impacts would be especially severe in the water resources sector, which in turn has wide implications on the other sectors of the economy including tourism. Facilitating proactive adaptation at the community and local level was considered crucial besides international assistance and national adaptation policies. The participants recognized that future efforts in adaptation should involve the civil society more proactively than before.

The Workshop Agenda is included as Annex I to this Executive Summary. The following sections highlight some of the key points raised by speakers during individual Workshop sessions. These brief session summaries are followed by a summary of salient points raised during a facilitated discussion and some general findings and conclusions.

Part 1: Key Challenges, Priorities and Objectives

Prof. Nobuo Mimura of Ibaraki University, Japan chaired the opening session and noted that adaptation to climate change is now an important part of international negotiations. By welcoming all participants, he appreciated the fact that the organizers took special efforts to invite as many PICs as possible to this important workshop. In his inaugural speech, Mr. Tuala Sale Tagaloa, the Samoan Minister of Natural Resources and the Environment, mentioned that adaptation to climate change is a high regional priority and that the workshop is the first major meeting on the Clean Development Mechanism (CDM) in the region. He noted that the workshop is timely to take stock of the progress and regional position before COP10 in Argentina, and the international conference for the 10-year review of implementation of the Barbados Programme of Action to be held in Mauritius in January 2005. He wished for an action-oriented workshop and asked participants to identify priorities for bilateral and multilateral cooperative initiatives in facilitating adaptation in the region. Remarks from Mr. Asterio Takesy, the Director of SPREP, highlighted that the Pacific region is already facing severe and frequent extreme events and cited the current drought in Samoa as an example. He emphasized that a Framework on Climate Change for the region is under review and thanked the Government of New Zealand for sponsoring the Round Table on Climate Change. Mr. Hiroaki Takiguchi of Ministry of the Environment, Japan reiterated that future actions in facilitating adaptation are crucial for sustainable development in the region. Ms. Jennifer McDonald, representing the Government of New Zealand, noted that the Pacific Island Forum members asked for a review of priorities in the region in an effort to develop a revised Framework next year and that she was keen to hear the views of participants in that direction. On behalf of Australia, Ms. Lisa Croft of Australian Greenhouse Office reported the launch of a new initiative on adaptation, in which assessments of economic, social and environmental impacts and implications for the region will be a key component. On behalf of the organizers, Dr. Tae Yong Jung of IGES and Dr. Myung-Kyoon Lee of URC noted that mainstreaming adaptation in developmental policies would be crucial for the region.

In his keynote speech, Prof. Patrick Nunn of the University of the South Pacific called for (a) re-focusing the discussion on climate change by emphasizing “no-regrets” adaptations and by replacing the language of pessimism with optimism, (b) re-centring agendas for coping with climate change by focusing on sustaining the Pacific community’s needs and on approaches that are appropriate to those communities, (c) re-establishing environmental policies which are appropriate and enforceable, and researching new ways of enforcement and (d) re-designing ways for appropriate empowerment of decision makers by seeking solutions based on Pacific ways of learning and enforcement. Mr. Andrea Volentras of SPREP then discussed the Pacific Islands Framework for Action on Climate Change, Climate Variability and Sea Level Rise, and provided the participants with a matrix of climate related activities in the region. He noted various ways to deepen and broaden cooperation among the partner organizations.

Dr. Ancha Srinivasan of IGES mentioned that the goal of the workshop was to serve as a forum that enables exchange of the latest knowledge and gain additional insights into ways for bridging research, policy and implementation to facilitate climate change adaptation and CDM in Pacific Island Countries (PICs) with the following objectives.

1. To discuss and share experiences and latest research on impacts of climate change and sea-level rise in the region
2. To identify adaptation policies and measures and assess their implementation across a range of sectors and stakeholders
3. To examine barriers and potential measures for mainstreaming adaptation in development planning at local, national and regional levels

4. To analyze current and potential cooperation mechanisms (capacity building, technology transfer, etc.) for facilitating adaptation
5. To assess current status and identify opportunities for effective implementation of CDM in the region
6. To identify ways for future collaborative actions in facilitating adaptation and CDM

Part 2: Climate Scenarios and Implications for the South Pacific

Dr. Tae Yong Jung of IGES chaired this session and noted that rapid advances in modelling efforts are crucial to predict the potential impacts of climate change at global, regional and national levels. Professor Murari Lal of the University of the South Pacific assessed the current understanding of climate variability and climate change in PICs including the linkages of inter-annual variability in weather patterns with El-Nino Southern Oscillation (ENSO) and South Pacific Convergence Zone (SPCZ). He reported the prospects for an increased frequency of ENSO events, a shift in their seasonal cycle and changes in intensity of tropical cyclones in PICs. He also noted that interactions between the ENSO variability on decadal timescales and the thermohaline circulation are not well understood. Prof. Mark Morrissey, SPREP, discussed various climate change scenarios for the Pacific region and noted that El Nino is changing its character due to global warming and that it it complicates the sea level record in the Pacific. He identified the need for enhancement of Pacific Island Global Climate Observing System (PI-GCOS). Ms. Eileen Shea of East-West Centre noted that adaptation entails the consideration of climatic variability and change in ongoing decision making processes, development plans, projects and initiatives. Using a case study of water resources, she outlined some ways to enhance resilience such as incentives for water conservation, public-private partnerships, integrated water and land use management and integration of climate forecasts into decision making. She outlined the experiences of the Pacific ENSO Applications Centre and various lessons learned regarding effective scientific support for climate risk management using the ENSO event of 1997-98 as an example including the need for building trust and credibility, and for developing consistent and understandable messages. She concluded her talk by listing a few guiding principles for approaching adaptation mainstreaming through a collaborative, participatory process focused on sustainable development in the context of an integrated climate-society system.

Part 3: Climate Change Impacts in the Pacific Region

Dr. Ancha Srinivasan of IGES chaired this session, which consisted of six presentations focusing on impacts in various critical sectors of the Pacific region. Professor Nobuo Mimura initially provided an overview of current and future impacts of climate change and sea level rise on different ecosystems in the Asia-Pacific region. He cited the examples of earlier blooming of cherry blossoms in Japan with increasing mean temperature in March, northward migration of butterflies, etc. He underscored the importance of integrating both bottom-up and top-down approaches of vulnerability assessment, and highlighted the potential primary and secondary impacts of four sea level scenarios. He concluded that precautionary adaptive measures are crucial to cope with climate change and sea level rise in the region. Using an Aitutaki case study in Cook Islands, Ms. Pasha Carruthers outlined impacts of climate change on water resources and other related sectors, and highlighted the severity of salt water intrusion in coastal areas and its threat to shallow wells. She explained the benefits of community consultations in vulnerability and adaptation

assessment and listed various adaptation options for water resources sector. She also discussed the challenges and objectives of the Cook Islands framework for climate change.

Mr. Inoke Ratukalou discussed the adverse impacts of climate change on agriculture and forestry in Fiji. He outlined both on-site and off-site impacts of land degradation due to unsustainable land use practices and highlighted the importance of integrating considerations of climate, biodiversity and land degradation in a more holistic approach to resource management. He then pointed out good land use practices (e.g., intensive sloping land agriculture with contour cultivation, integrated watershed management) and early warning systems that would facilitate adaptation to climate change and extreme events. Mr. Andrew Wright of SPREP discussed the impacts of El Nino and La Nina on the ability to catch different tuna species. He discussed the impacts of ENSO events on the distribution, migratory patterns and recruitment of tuna stocks and reported that El Nino events had positive effects on skipjack and yellow-fin recruitment but negative effects on albacore. He predicted spatial extension of present fisheries to higher latitudes due to global warming.

Dr. Paulo Vanualalai from Ibaraki University highlighted adverse impacts of climate change on coastal areas, including erosion, inundation, silting, etc, and reported that nearly 90% of coastal protection systems suffered some form of structural breakdown like leaning, toe erosion, loss of backfill, and total failure. He discussed the results of a laboratory experiment on beach protection and suggested that careful planning is necessary to combine natural and artificial elements of coastal protection. Mr. Peter Craig from American Samoa reported that coral reefs in the Pacific region would be severely impacted by global warming over the next 20 to 30 years. He indicated that increased water temperatures would result in coral mortality and disease while an increase in dissolved CO_2 would reduce coral growth and induce reef erosion. He offered a number of suggestions for adaptation measures including: minimizing other stresses on coral reefs (e.g., from increasing populations and pollution); establishing marine protected areas; and enhancing scientific research as part of adaptation programs.

Part 4: Local Adaptation Measures to Cope with Climate Change and Extreme Events

Mr. Tsuneo Takeuchi of IGES chaired this session and noted that adaptation to climate change is a basic human trait and that the people and ecosystems of the South Pacific region accumulated substantial local knowledge in adapting to climate change. Prof. John Hay of the University of Waikato emphasized that climate-related risks to PICs are already very high and that climate change will exacerbate such risks. He highlighted that adaptation is a complex process and is more than just the case of technical or policy measures. He noted that there are many dimensions of adaptation and suggested that proactive adaptation would be advantageous for a number of reasons. Using a case study of Kosrae (Federated States of Micronesia) road building project, Prof. Hay showed why proactive adaptation is usually highly advantageous and recommended approaches for climate proofing of national infrastructure development plans in PICs. Mr. Taito Nakalevu of SPREP noted that adaptation is very much linked to livelihood issues at community level. Using the case study of the CIDA-sponsored CBDAMPIC (Capacity Building for the Development of Adaptation Measures in PICs) project, he explained how local communities might be involved in vulnerability and adaptation assessment and how capacity of such communities to cope with climate change could be enhanced.

Mr. Poni Faavae from Tuvalu cited several examples of traditional practices (e.g., Faka-Fenua, Te Kakega, Te Liiga, Te Panakua, Te Kaufata, etc.) to cope with climate change

in Tuvalu and suggested that integration of local knowledge and modern scientific knowledge is crucial. After discussing key meteorological features of the South Pacific, Mr. Penehuro Lefale from NIWA, New Zealand explained two ongoing research projects on traditional knowledge of Maori tribes and Samoans on weather, climate variability and change, which attempt to document and evaluate the potential role of traditional knowledge in selected indigenous communities. He noted that traditional knowledge of weather in Samoa, for example, seemed to be as accurate as western scientific knowledge, and argued for allocation of more resources into documenting and integrating local knowledge in climate change adaptation plans.

Part 5: Approaches and Policies for Facilitating Adaptation

Mr. Taito Nakalevu chaired this session and stressed that adaptation to climate change requires multiple approaches at multiple levels of governance. Dr. Ancha Srinivasan discussed issues and challenges for integrating adaptation concerns in development programs at international, national and local levels. By noting that adaptation has not received enough attention in international climate negotiations to date, he argued for more active discussions leading to the design of an adaptation protocol along the lines of the Kyoto Protocol. Using Bangladesh as a case study, he pointed out that mainstreaming adaptation concerns in different sectors and activities was minimal so far. He emphasized that policies to facilitate proactive micro adaptation are crucial in the region and recommended for creation of additional mechanisms and channels for facilitating learning and dialogue on adaptation in the context of sustainable development. Ms. Misa Andriamihaja outlined UNDP's efforts focusing on the development of the adaptation policy framework, regional and national adaptation assessments, and implementation of adaptation policies and projects. She listed various UNDP initiatives in PICs and gave a detailed explanation on how to access assistance and funding from UNDP/GEF.

Mr. Paul Fairbairn discussed the South Pacific Applied Geoscience Commission (SOPAC)'s approaches to facilitate adaptation in PICs by listing various initiatives under its 3 Programs: Ocean and Islands; Community Lifelines and Community Risk. He highlighted SOPAC's efforts in organizing the Pacific Dialogue on Water and Climate, and in publishing the Island Climate Updates with the support from New Zealand. Mr. Fairbairn also noted the importance of addressing energy sector issues as part of both climate adaptation and mitigation programs. He also highlighted the value of the Comprehensive Hazard and Risk Management (CHARM) tool in the context of climate adaptation in the Pacific. Prof. Nobuo Mimura informed the participants of the resource book on "Climate Variability and Change and Sea Level Rise in the Pacific Islands Region" published by the Ministry of the Environment of Japan, and SPREP. The book covers five themes: processes and projections; consequences; mitigation; adaptation; and international responses. Prof. Mimura noted that adaptation policies in PICs must address impacts from current climate variability, including extreme events, and simultaneously augment efforts to cope with future climate change.

Part 6: Adaptation Policies of National Governments

Mr. Andrea Volentras chaired this session, in which adaptation policies of selected national governments in the region were reviewed. Ms. Ilisapeci Neitoga outlined the draft version of Fiji's climate change policy and noted that several climate policies are being incorporated into various sectoral policies of the government. She noted various barriers such as low prioritization of climate change issues and problems in information sharing but she

was optimistic that policy makers might take climate change as a priority if we convince them regarding the costs of inaction. Mr. Brian Phillips from Vanuatu noted that adaptation policies have initially focused on sector-specific laws and policies. While specific clauses addressing climate change and adaptation have not yet been incorporated into large-scale national policies in Vanuatu, he noted that changes to forestry, fisheries, environmental protection and coastal zone management legislation are currently being considered. He outlined the experiences of the CBDAMPIC project in Vanuatu and other initiatives such as NAPA, PIREP, the Second National Communication and the National Capacity Self Assessment. Mr. Chanel Iroi reported that Solomon Islands developed a draft National Implementation Strategy on climate change that integrates both government-driven and community-driven activities. Mr. Joseph Konno reported that Federated States of Micronesia was largely successful in integrating climate change concerns in national planning. He cited an example that 30% of the US funding goes to infrastructure development that takes climate change ("climate-proofing") concerns into account. Mr. Laavasa Malua listed various current policy initiatives and measures for adaptation to climate change in Samoa. He underscored the need for systemic, institutional and individual capacity building and for monitoring and evaluation of adaptation projects. He noted that participatory policy development processes ensure a bottom-up approach that encourages wider ownership and commitment.

Mr. Andrea Volentras later informed the participants of the current status of international negotiations on adaptation by referring to various UNFCCC articles. He briefly summarised available funding schemes for adaptation under the UNFCCC (Special Climate Change Fund, Least Developed Countries' Fund) and the Kyoto Protocol (Adaptation Fund). He assessed funding commitments for adaptation and risk management projects in PICs and argued that further commitments would be crucial for facing the challenge in the region.

Part 7: Mainstreaming Adaptation and Capacity Building Issues

Dr. M. K. Lee of URC chaired this session and stressed the importance of capacity building activities for facilitating adaptation to climate change. Mr. Taito Nakalevu reported that mainstreaming adaptation into development planning has not received much attention in PICs so far due to several barriers such as low human and financial capacity and limited insight into the economic ramifications of climate change impacts. He discussed both approaches of policy level- and operational level- mainstreaming and noted that dissemination of relevant information in appropriate languages by involving various stakeholders is critical for mainstreaming. Mr. Nakalevu specifically highlighted the importance of effective engagement and empowerment of affected communities and building on existing policy mechanisms, institutions and programs; as well as the need for greater information sharing in the region. Mr. Andrew Teem from Kiribati gave an overview of the Japan-funded World Bank project in Kiribati and explained how adaptation is being mainstreamed into development planning by conducting a national consultation process for impact assessment. Mr. Teem highlighted coastal resources and water resources as particularly critical sectors. He reported that island representatives identified key hazards over the past 20-40 years and then grouped adaptation options into four categories depending on urgency and need for assistance from the government. Those options which required government intervention were again grouped into five categories depending on the nature of the response in terms of engineering and construction, information dissemination, and formulation of environmental regulations or national policies. Mr. Teem also explained the salient features of the Pilot Investment Phase of the Kiribati Adaptation Program (2005-08) and discussed various challenges for attracting investment for adaptation projects.

Dr. Mac Callaway of URC reported that planners often do not design climate change their projects and policies due to lack of reliable climate change forecasts and end up taking a wait and see attitude. Using the case of a multi-purpose water reservoir, he explained how cost-benefit analysis might be undertaken for various climate-sensitive investments. He recommended effective stakeholder involvement in project planning and argued that the climate change community should focus on producing useful information about climate risks at relevant scales and work toward characterizing these risks in statistical terms. Ms. Leilani Duffy of UNDP Samoa gave an overview of the GEF Small Grants Programme and discussed capacity development needs for community-based climate change adaptation initiatives. She reported that at the local community level, the SGP will develop capacity among NGOs and community-based organizations for implementing adaptation projects and that the primary role of developing the capacity of community members will remain with the NGOs and CBOs. She also explained the SGP project design and approval process and encouraged representatives from PICs to take advantage of the programme.

Part 8: Facilitated Discussion on Bridging Adaptation Research, Policy and Implementation

The participants discussed the following questions.

1. What are the major climate change adaptation issues in the Pacific region? What are the gaps in understanding that prevent us from making a compelling case?
2. What are the options for mainstreaming adaptation in national/sectoral development planning?
3. How can we establish a more effective science-policy partnership to support adaptation mainstreaming? (e.g., communication, research design, project evaluation)
4. What near-term recommendations can we make to bridge adaptation research, policy & implementation in PIC?
    - Bridging – natural and social sciences
    - Bridging – across sectors
    - Bridging – across levels (local, sub-national, national, regional, global)

Salient Points of the Discussion:

- **Mainstreaming climate change concerns in development planning:** The challenges presented by today's patterns of climate variability and projected climate change impacts in the Pacific necessitate mainstreaming adaptation into development plans, policy formulation and decision making. Both "top-down (country-driven)" and "bottom-up (community-driven)" as well as "policy-level" and "operational-level" mainstreaming are considered vital. For mainstreaming climate change concerns in policies of ministries other than the environment, Prof. Mimura suggested that it is useful to show a critical issue within the agenda of the other ministries that is most likely to be impacted by climate change. He also suggested that we must consider changing dynamics between climate change planners and planners in other ministries.
- **Concerns for Water Resources:** Several participants noted that the water resources sector in most PICs is already constrained due to competing demands and interacting stresses. Climate variability and change affect Pacific Island water resources in a number of ways including changes in rainfall, saltwater intrusion due to sea level rise, storm surge and changes in patterns of tropical cyclones. Impacts of climate change on this sector have cascading effects on other sectors such as agriculture, tourism,

fisheries and health. Participants encouraged a number of specific actions to support adaptation in the water resource sector including:

- access to technologies such as desalination, and capacity building related to water quality testing and monitoring;
- access to seasonal forecasts of climate variability for the region and individual nations;
- gradual introduction of water conservation and rationing systems, and policies of water pricing and other economic measures;
- effectively involving stakeholders through dialogues such as the Dialogue on Climate and Water co-organized by SOPAC and giving a role for water users in various ways including environmental impact assessments, vulnerability assessments and adaptation assessments; and
- improved projections of climate change impacts on rainfall, extreme events and sea level rise and the socio-economic implications of those changes for the region as a whole and for individual nations.

- **Proactive use of climate change data and information in development planning:** Many participants noted the need for using climate change data and information proactively during development planning and resource management but noted that access to historic climate data was sometimes limited and that discontinuities in data records were a barrier to the effective use of climate information. In this context, participants encouraged a number of specific efforts including:
  - plans by the National Institute of Water and Atmospheric Research to digitize their weather and climate data holdings for the Pacific Region;
  - development of a Pacific island data policy based on common data standards and for creation of a region-wide centralized database on impacts assessment that complements and builds on national activities; and
  - enhancement of national level as well as regional efforts to develop and use climate information in planning and policy formulation including closer coordination with national meteorological and hydrological services.
- **Need for reliable climate information and credible long term forecasts:** Some participants questioned if there is credible information on future water availability in PICs in terms of capacity to forecast and ability of forecasting offices to offer reliable information. In this context, the need for development of credible long term seasonal forecasts for the region and individual countries, and for development of the capacity of information providers was emphasized. Some participants underscored the difficulties in prediction of extreme climate events and their frequency, and associated socio-economic impacts.
- **Common data standards and regional database:** The need for development of a Pacific island data policy based on common data standards and for creation of a region-wide centralized database on impacts assessment was emphasized. Using common data standards in various islands was considered critical to ensure data convertibility. In some cases, it was considered that regional efforts might be more important than nation-wide efforts to overcome problems in data sharing. However, a regional approach must complement and build on national activities, and overdependence on regional work without ensuring quality is dangerous, because any data given to a regional database is as good as what is contributed by the country. Some participants, however, noted that several countries in the region are now ready to take up new challenges and that countries such as Federated States of Micronesia are looking for country-specific approaches rather than region-wide approaches.

- **Climate risk profiles:** Participants recognized the need for integrating accumulated data into risk-assessment framework. Implementing climate change round table in order to provide access to data and regional institutions was considered crucial. In this connection, Prof. John Hay described the ADB's initiative to develop climate risk profiles for Federated States of Micronesia and Cook Islands. Climate risk profiles show the spatial and temporal risk of a country to impacts of climate change. They need to be updated at regular intervals to be of direct benefit to policy makers. Many participants felt the need to expand the development of climate risk profiles for other PICs, and to develop regional strategies for climate risk profiles. They also recommended that an assessment of the needs for such national profiles must be conducted by in-country teams and that capacity of such teams must be strengthened.
- **Need for inter-ministerial coordination and innovative policies:** On a policy level, lack of coordination among ministries and absence of innovative policies such as incentives and disincentives for water use including water pricing are also acting as barriers for facilitating adaptation to climate change in the PICs. In order to enhance coordination, countries like Niue established National Sustainable Development Councils in which all ministries participate and discuss common challenges including climate change.
- **Need for further awareness on adaptation:** Some participants underscored the importance of launching or expanding adaptation pilot projects and good leadership in promoting climate change policies. A participant noted that raising awareness of climate change issues is crucial and cited an example of Climate Change Awareness Day in Samoa when all ministries participate collectively in various initiatives on this day. Likewise, in countries such as Tuvalu, climate change is now considered a main element of planning. For example, district coastal infrastructure management plans in Tuvalu consider climate impacts more seriously than before.
- **Proactive involvement of stakeholders:** More active involvement of stakeholders in adaptation policy research design process through empowerment, engagement and capacity building was considered vital. Many participants suggested that building partnerships with all relevant players including the civil society (NGOs, Churches, etc.) crucial. Churches play a major role in getting messages across the communities in the region, hence it is important to target such trusted information brokers and institutions and individuals of influence in all climate change discussions. Some participants suggested that it is important to hold region-wide stakeholder consultations and provide necessary guidance to civil society on critical issues of adaptation.
- **Community-based adaptation:** In the context of engagement and empowerment, some participants cited factors accounting for the success of some regional initiatives such as CIDA's community-based adaptation project, which listened to voices of women and children. Likewise, three factors seem to have contributed to regional initiatives such as PICCAP: Development of tools for vulnerability and adaptation assessment; Creation of country teams which assessed their priorities; and Capacity building. A participant cited successful involvement of stakeholders in Fiji through bottom-up approaches. He also suggested that donors should demand that adaptation policies should be designed in consultation with people who are most vulnerable.
- **Dissemination of climate information:** A systematic approach for dissemination of climate information targeted to meet the adaptation needs of each country was considered crucial in the region. It includes measures such as documentation in vernacular languages, development of adaptation guidelines in a user-friendly manner, using mass media to communicate with the civil society, and sharing information on

good adaptation practices. Some participants noted the need for not only documentation of policies but also evaluation of the past policies to determine the policies that were most effective so as to make legislations to be effective and realistic. Participants also recommended that some of these ideas from this workshop must be incorporated in future proposals on adaptation in various PICs.

Part 9: SUMMARY and CONCLUSIONS

1. Participants agreed on the need for further efforts to build linkages among adaptation science (in terms of developing regional climate scenarios, preparing climate risk profiles and assessing current and future impacts), policy (in terms of both community-level and national policies, through mainstreaming and by involving all stakeholders and institutions and individuals of influence in the region) and implementation (by addressing concerns of funding, developing regional databases, sharing information in vernacular languages, etc.) in the region. A few participants felt that there is no need to formulate additional sets of adaptation policies in the form of new environmental laws, but to use existing regulations and procedures such as regulations related to environmental impact assessment. They also suggested more effective implementation of the existing policies and initiation of several pilot adaptation projects on the ground that make real differences to ecosystems and human livelihoods.
2. PICs, which comprise a wide range of ecosystems and habitats that are predominantly influenced by marine systems, face a unique and challenging situation with respect to adaptation to climate change. The key sectors vulnerable to climate change in the region include freshwater resources (due in part to salt water intrusion), agriculture, fisheries, tourism, and human settlements. Irreversible damage to mangroves, wetlands and other ecosystems is also reported. Many participants emphasized the need for designing adaptation strategies and policies especially in the water resources sector, as it has wider implications on other sectors such as agriculture and tourism.
3. Participants recommended additional efforts to populate and utilize region-wide climate data management systems such as the Pacific Island Data Network. Likewise, many participants noted the need for developing climate risk profiles for all PICs.
4. The issue of differentiating impacts from climate variability and extreme events, and those from climate change was discussed. It was felt that such differentiation is indeed difficult for several reasons. Participants, however, agreed that adaptation to current climate variability and extreme climate events would enhance capacity to cope with future changes in climate. Participants also recognized the need for additional discussions on this issue at international level, because discussions at the UNFCCC are mainly targeted at supporting initiatives to address climate change rather than climate variability and extreme climate events. Some participants noted that responsibility to implement adaptation measures in response to climate variability and extreme events lies with each country while some participants felt that long-term climate change is indeed responsible for increased frequency of extreme climate events and that international assistance is vital to cope with such extreme events. How to determine the additionality factor due to climate change and incremental costs remain a challenge to both researchers and policy makers.
5. Some participants identified the prospects for utilizing funding mechanisms of other conventions such as Convention on Biodiversity (CBD) or desertification (UNCCD) to address concerns of adaptation to climate change. A few participants, however,

were not convinced if it would be realistic to access funds from other conventions to enhance adaptation to climate change.

6. Participants underscored the linkages between climate change and sustainable development, and the need for mainstreaming adaptation in the sustainable development agendas of the countries in the region. This topic was discussed at length. Some participants responded that development practitioners were not yet convinced of the impacts of climate change on various sectors due to limited awareness, which in turn might be due to poor communication between researchers and policy makers.
7. Several participants argued for utilizing bottom-up approaches in designing adaptation policies. The need for encouraging community-based adaptation initiatives was repeatedly mentioned. Some participants felt that shortcomings of some adaptation projects in the region were due to ignorance of local knowledge and failure to involve communities and other important stakeholders in the region. A few participants however felt that top-down planning is as crucial as bottom-up approaches and that it is important to combine both country-driven and community-driven adaptation policies. This point will require further examination from now on, depending on the actual circumstances in each country.
8. Participants discussed the appropriate actions to be taken collectively to translate scientific information into useable information by policy makers. A multi-pronged strategy that includes publication of resource books such as that published by the Ministry of the Environment of Japan and SPREP, rapid dissemination of reliable and consistent information (such as projected shifts in migration of tuna) in local languages, effective and proactive involvement of stakeholders including church leaders, and initiation of "learning by doing" type adaptation projects, is suggested. Despite publication of IPCC reports and other publications, many participants felt the need for more policy-relevant information on impacts and adaptation. The need for appropriate empowerment and country-specific capacity building was noted.

Part 10: Clean Development Mechanism in Pacific Island Countries: Issues and Challenges

Dr. Myung-Kyoon Lee of URC chaired the introductory session in which the basic concepts of CDM were introduced and the current status of CDM in various PICs was assessed. Mr. Yuji Mizuno illustrated the basic concepts of CDM and noted that there are merits for both host countries and developed countries when CDM was implemented effectively. He then described various steps in developing a CDM project including project planning, making Project Design Document (PDD), approval from both host country and developed country, validation by a third party, registration by the CDM Executive Board (CDM-EB), project implementation, monitoring of GHG emissions, verification by an operational entity, and issuance of credits by the CDM-EB of the UNFCCC. He highlighted that preparation of a good PDD was critical for getting a CDM project approved.

Mr. Solomone Fifita discussed current status and prospects for CDM in the PICs with a focus on renewable energy sources. He noted that PICs have about the highest renewable resource potential per capita in the world. While most PICs have plentiful solar, wind and biomass resources, countries such as FSM, Fiji, Papua New Guinea, Samoa, Solomon Islands and Vanuatu have both hydro and geothermal resources. He noted that political will and market are also available, considering the fact that 14 PICs ratified the UNFCCC and 13 ratified the Kyoto Protocol so far. He, however, noted that the environment is not yet conducive for win-win partnerships due to limited awareness, low technical and institutional

capacity and financial constraints. He explained how the Pacific Islands Renewable Energy Project (PIREP) has been trying to remove those barriers in selected countries of the region.

Participants from each of the 12 PICs then reported the current status of CDM in their respective countries by considering points such as: UNFCCC ratification status, Kyoto Protocol ratification/accession status, Current awareness of the Kyoto Protocol, Government's commitment to use CDM for Sustainable Development, Establishment of Designated National Authority (DNA), development of sustainable development criteria for CDM projects and legal framework for CDM projects. Participants also discussed current awareness on CDM by Policy makers; Private Sector; NGOs; Academia, Capacity building activities related to CDM – Project design document preparation; CDM guidebooks in local languages; Preparation of investor guides for the region/country; Negotiation with investors; and role of international and regional organizations with respect to CDM. Wherever relevant, participants also discussed the priority sectors, past feasibility studies, pilot CDM projects, etc. The expectations of different stakeholders, basic barriers and potential ways to overcome the barriers were also noted. The participants reported that the concept of CDM is still new to many PICs and noted the importance of systemic, institutional and human capacity building. The development of renewable sources in the region has been limited in part due to the difficulties of small markets in providing alternatives at reasonable cost.

Ms. Ilisapeci Neitoga reported that despite designation of the Department of Environment as DNA, the concept of CDM is quite new in Fiji and that raising awareness among various stakeholders is crucial. She listed various barriers such as lack of institutional framework including lack of energy policy, high capital costs of most renewable energy-based CDM projects, limited in-country expertise and lack of awareness of cost and benefits of CDM. She reported that renewable energy is not a priority sector in Fiji due to high capital costs as compared with diesel-based projects and that funding for RE projects is negligible.

Ms. Violet Wulf mentioned that CDM is new in Samoa and that no DNA is established yet. She explained that Samoa gained some experience in renewable energy and energy efficiency projects such as PREGA and REEP projects by ADB, and noted that such experience might be useful in implementing CDM projects. She also noted several barriers including lack of awareness and in-country capacity. Mr. Andrew Teem reported the experiences of PIREP project in Kiribati. He felt that CDM may not be of significant value in Kiribati. Ms. Pash Carruthers mentioned that CDM potential in Cook Islands is slim. She reported that some initiatives such as landfill reclamation and a biogas project and photovoltaic project were discontinued due to very high costs. She reported that Foundation for Environmental Law developed three years ago a guidebook for CDM implementation in small island states, mainly to increase awareness. She noted that awareness of costs and benefits of CDM projects was limited and that people are interested in seeing real examples.

Mr. Chanel Iroi reported that there is very limited awareness of CDM in Solomon Islands and that DNA was not established yet. He discussed the experiences from an Australian funded project on energy efficiency and reported that similar projects could be proposed for CDM. Mr. Brian Phillips reported that a national advisory committee on climate change was already constituted in Vanuatu but it was not yet designated as DNA. Ms. Tagalo Cooper reported that general awareness of CDM among policy makers is very low in Niue but a project for raising awareness was recently approved. She noted that the first draft of the 2nd National Communication identified several barriers for CDM implementation including political instability, isolation, small population, limited private sector and limited investor interest. She reported a new initiative of the Niue Island Organic Farms Association to exploit solar energy with co-financing from Greenpeace.

Ms. Lu'isa Tu'iafitu noted that Tonga is preparing a recommendation to ratify the Kyoto Protocol. She reported the existence of a few New Zealand-funded renewable energy

projects but noted that lack of awareness on climate change issues was the major barrier in utilizing CDM. Mr. Poni Faavae reported that Tuvalu ratified the Kyoto Protocol and implemented a pilot project on solar energy. He noted that CDM awareness in the country is very limited and argued for new initiatives on capacity building. Mr. Lee Jacklick reported that CDM is still in infancy in Marshall Islands, although it ratified both the UNFCCC and the Kyoto Protocol long ago. He reported a few feasibility studies on solar energy and identified barriers such as small size, and limited awareness. Mr. Joseph Konno reported that there is high awareness of the climate change issues among policy makers in Federated States of Micronesia. He noted that institutional structures are in place although a DNA was not yet established. Mr. Peter Craig reported CDM did not receive much attention in American Samoa since the US is not a party to the Kyoto Protocol. He noted a serious lack of awareness of the issue among policy makers despite its vulnerable energy supply.

The second and final session was chaired by Dr. Ancha Srinivasan of IGES. In this session, potential applications of CDM and current initiatives for capacity development for CDM were discussed. Considering the importance of small scale CDM projects in PICs, Mr. Yuji Mizuno explained the differences between a normal and small scale CDM project. He discussed the concepts of baseline and additionality and explained how they are addressed in developing a small-scale CDM project. Mr. Takeo Tashiro described innovative means for solid waste management as well as implications for reducing global warming. He explained how the Fukuoka method of waste management could reduce greenhouse gas emissions.

Dr. M K Lee briefly explained the activities of the UNEP Riso Center for Climate, Energy and Development and discussed the experiences of URC's project on capacity development for CDM. He noted that the project assisted in establishing and/or consolidating a Designated National Authority (DNA), and published several CDM brochures and guidebooks. He reviewed the progress of the project in Asia, Middle East and North Africa, Sub-Saharan Africa and Latin America. Dr. Ancha Srinivasan explained another capacity building initiative for Asia, which was initiated by IGES in October 2003. He explained that the program was aimed at capacity building for CDM projects in sectors such as waste to energy, renewable sources of energy and small scale CDM projects.

Participants discussed various ways to overcome different barriers to promote CDM. They urged various bilateral and international organizations to undertake CDM capacity building activities in the region and create an enabling environment for CDM.

ANNEX I: AGENDA OF THE WORKSHOP

Facilitating Adaptation to Climate Change in the South Pacific Region - Bridging Research, Policy, and Implementation

Organized by the
Institute for Global Environmental Strategies (IGES), Japan and
UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Denmark
[In collaboration with the
Secretariat for the Pacific Regional Environmental Programme (SPREP), Samoa]
Sponsors: Ministry of the Environment, Japan, Government of New Zealand, and Australian Greenhouse Office, Australia
VENUE: SPREP Training and Education Centre, Apia, Samoa
12-14 October 2004

DAY 1: October 12, 2004

Time	Agenda	Speakers
09:00 - 10:10	**Session 1:** **Inaugural Session** **Chairperson:** Dr. Nobuo Mimura, Professor, Ibaraki University, Japan	**Prayer:** Mr. Taito Nakalevu
		Inaugural Address: Mr. Tuala Tagaloa, Minister , Natural Resources & Environ., Samoa
		Opening Remarks: Dr. Tae Yong Jung, Climate Policy Project Leader, IGES, Japan Dr. Myung-Kyoon Lee, Climate Coordinator, URC, Denmark Mr. Asterio Takesy, Director, SPREP Mr. Hiroaki Takiguchi, Ministry of the Environment, Japan Ms. Jennifer McDonald, Deputy High Commissioner to Samoa, New Zealand Ms. Lisa Croft, Australian Greenhouse Office, Australia
		Keynote address: Adaptation to Climate Change and Variability in the South Pacific – Issues and Priorities for Policy Action Prof. Patrick Nunn, University of the South Pacific, Fiji
		Keynote presentation: Climate Change Framework & Adaptation Priorities for the South Pacific Region Mr. Andrea Volentras, Climate Coordinator, SPREP, Samoa
		Objectives and Scope of the Workshop Dr. Ancha Srinivasan, Principal Researcher & Manager, IGES
10:10 - 10:30 Coffee break		

Time	Agenda	Speakers
10:30 - 12:00	**Session 2: Climate Scenarios and Implications for the South Pacific** **Chairperson:** Dr. Tae Yong Jung, IGES	**An overview of present and future climate variability in the Pacific** Prof. Murari Lal, University of the South Pacific, Fiji
		Pacific Islands Regional Climate Scenario Professor Mark Morrissey, SPREP, Samoa
		Adaptation to a changing climate in the Pacific: Lessons learned from ENSO and Extreme Climate Events Ms. Eileen Shea, East West Centre, Hawaii
		General Discussion
12:00 - 13:00 Lunch		
13:00 - 15:30	**Session 3: Climate Change Impacts in the Pacific Region** **Chairperson:** Dr. Ancha Srinivasan, IGES	**Current and future impacts of climate change and sea-level rise – An overview** Prof. Nobuo Mimura, Ibaraki University, Japan
		Impacts of climate change on water resources – A case study from Cook Islands Ms. Pasha Carruthers, Cook Islands
		Impacts of climate change on agriculture and forestry – A case study from Fiji Mr. Inoke Ratukalou, Ministry of Agriculture, Fiji
		Impacts on fisheries, coastal resources and marine ecosystems Mr. Andrew Wright, SPREP, Samoa
		Impacts of climate change on coastal infrastructure Dr. Paulo Vanualailai, Ibaraki University, Japan
		Impacts of climate change on coral reefs Mr. Peter Craig, Coral Reef Advisory Group, American Samoa
		General Discussion
15:30 - 16:00 Coffee Break		

Time	Agenda	Speakers
16:00 – 18:00	**Session 4: Local Adaptation Measures to Cope with Climate Change and Extreme Events** **Chairperson:** Mr. Tsuneo Takeuchi, IGES, Japan	**Proactive versus reactive responses to climate change and sea-level rise – Issues and options** Professor John Hay, University of Waikato, New Zealand
		Community-level adaptation to climate change in remote islands – A CIDA/SPREP adaptation project Mr. Taito Nakalevu, SPREP, Samoa
		Local community knowledge to enhance adaptation to climate change – A case study from Tuvalu Mr. Poni Faavae, Tuvalu
		Local knowledge for facilitating adaptation in the Pacific Mr. Penehuro Lefale and Mr. Darren King, National Institute of Water and Atmospheric Research, New Zealand
		Policies for facilitating adaptation in Samoa Mr. Laavasa Malua, Ministry of Natural Resources, Lands, Survey and Environment, Samoa
		General Discussion
18:30 – 20:00	**Reception hosted by IGES/URC**	

DAY 2: October 13, 2004

Time	Agenda	Speakers
09:00 - 10:40	**Session 5: Approaches and Policies for Facilitating Adaptation** **Chairperson:** Mr. Taito Nakalevu, SPREP	**Adaptation policies in the context of sustainable development – Issues and challenges** Dr. Ancha Srinivasan, IGES, Japan
		UNDP's policies for facilitating adaptation to climate change Ms. Misa Andriamihaja, UNDP, Samoa
		SOPAC's integrated approach in facilitating adaptation to climate change in the Pacific Mr. Paul Fairbairn, South Pacific Applied Geoscience Commission, Fiji
		MOEJ-SPREP Resource book on climate variability and change and sea-level rise in the Pacific islands region – A few lessons for promoting adaptation Prof. Nobuo Mimura, Ibaraki University, Japan
		General Discussion
10:40 – 11:00	**Coffee break**	
11:00 - 12:40	**Session 6: Adaptation Policies of National Governments** **Chairperson:** Mr. Andrea Volentras, SPREP, Samoa	**Fiji's policies for facilitating adaptation to climate change** Ms. Ilisapeci Neitoga, Fiji
		Vanuatu's policies for facilitating adaptation Mr. Brian Phillips, Vanuatu
		Policies for facilitating adaptation in Solomon Islands Mr. Chanel Iroi, Solomon Islands
		Current status of international negotiations on adaptation at UNFCCC Mr. Andrea Volentras, SPREP, Samoa
		General Discussion
12:40 – 13:30	**Lunch**	

Time	Agenda	Speakers
13:30 - 15:10	**Session 7: Main-streaming Adaptation and Capacity Building Issues** **Chairperson:** Dr. M.K. Lee, URC, Denmark	**Mainstreaming adaptation in development planning through enhanced capacity building: SPREP perspectives** Mr. Taito Nakalevu, SPREP
		Mainstreaming adaptation in national economic planning: Kiribati's experience Mr. Andrew Teem, Kiribati
		Economic assessment of adaptation options for capacity building Dr. Mac Callaway, URC, Denmark
		GEF Small Grants Programme: Community climate change adaptation initiatives and capacity development needs Ms. Leilani Duffy, UNDP, Samoa
		General Discussion
15:10 – 15:30 Coffee Break		
Session 8: Facilitated Discussion on Building for the Future (15:30 – 17:30)		
Chairperson: Prof. Nobuo Mimura, Ibaraki University, Japan **Facilitator:** Ms. Eileen Shea, East-West Centre, USA **Rapporteur:** Dr. Ancha Srinivasan, IGES, Japan		
Open discussion on priorities for bridging adaptation research and policies, identification of potential areas for future collaboration, etc. Main points for discussion include the following: 1. What are the main issues for adaptation to climate change in this region? What are the gaps in our understanding that prevent us from making a compelling case for adaptation? 2. What are the options for mainstream adaptation in national development planning? 3. How can we establish a more effective science-policy partnership to support adaptation mainstreaming? (e.g., communication, research design, project evaluation) 4. What near-term recommendations can we make to bridge adaptation research, policy & implementation in PIC? • Bridging – natural and social sciences • Bridging – across sectors • Bridging – across levels (local, sub-national, national, regional, global)		
18:30 – 20:00 Reception hosted by SPREP		

Day 3: October 14, 2004

Introductory Seminar on Clean Development Mechanism (CDM) in Pacific Island Countries: Issues and Challenges

Time	Agenda	Speakers
9:00 - 11:00	**Session 1: Principles and current status of CDM** **Chairperson:** Dr. M K Lee, URC	**Steps in Developing a CDM Project – An Introduction** Mr. Yuji Mizuno, Pacific Consultants Limited, Japan
		Current status and prospects for CDM in the Pacific islands with focus on Renewable Energy Mr. Solomone Fifita, Chief Technical Adviser, Pacific Islands Renewable Energy Programme, SPREP
		Discussion
		Current status of CDM in Fiji, Samoa, Kiribati and Cook islands Representatives from the above countries – 5 minutes per country
		Current status of CDM in Solomon islands, Vanuatu, Niue and Tonga Representatives from the above countries – 5 minutes per country
		Current status of CDM in Tuvalu, Marshall islands, Federated States of Micronesia and American Samoa Representatives from the above countries – 5 minutes per country
11:00 – 11:20	**Coffee Break**	
11:20 - 13:00	**Session 2: CDM Applications and Capacity Building Initiatives** **Chairperson:** Dr. Ancha Srinivasan, IGES	**Small-scale CDM projects: Prospects and barriers** Mr. Yuji Mizuno, Pacific Consultants Inc., Japan
		Opportunities for CDM Projects in the waste management sector Mr. Takeo Tashiro, JICA Representative at SPREP, Samoa
		Capacity Development for CDM – Experiences and Outlook Dr. M K Lee, UNEP Risoe Centre, Denmark
		Integrated Capacity Strengthening for CDM – Experiences and Outlook Dr. Ancha Srinivasan, IGES
		General discussion on challenges to promote CDM in PIC
		Wrap-up and Vote of thanks – Dr. Ancha Srinivasan, IGES **Prayer – Mr. Taito Nakalevu**
13:00 – 14:00	**Lunch**	
14:00 – 18:00	**Study Tour**	

ANNEX III: GEOGRAPHIC AND SOCIO-ECONOMIC INDICATORS OF PACIFIC ISLAND COUNTRIES AND TERRITORIES REPRESENTED AT THE WORKSHOP

	Political status	Land area (sq. km)	Exclusive Economic Zone (million sq. km)	Population (1998-99 estimate)	GDP per capita (US$)	Geographic type
American Samoa	Unincorporated US territory	240	0.39	61,100	4,660	High islands, with a few atolls.
Cook Islands	Self-governing in free association with New Zealand	237	1.83	16,500	4,947	High islands and atolls
Federated States of Micronesia	Self-governing in free association with US	702	2.78	116,400	2,070	High islands and atolls
Fiji	Independent state	18,333	1.29	801,500	2,864	High islands a few minor atolls
Kiribati	Independent state	811	3.55	88,600	702	Predominately Atolls
Marshall Islands	Self-governing republic in free association with US	720	2.13	63,200	1,182	Atolls
Niue	Self-governing in free association with New Zealand	259	0.39	2,100	3714	Raised coral Island
Samoa	Independent state	2,935	0.12	168,000	1060	High islands
Solomon Islands	Independent state	28,370	0.60	408,400		High islands – a few atolls
Tonga	Independent kingdom	649	0.07	100000	1157	High islands – a few small atolls
Tuvalu	Independent state	26	1.30	9,600	1157	Atolls
Vanuatu	Independent state	12,190	0.71	193,200	1231	High islands – a few small atolls

ANNEX IV: MAP OF THE PACIFIC ISLAND COUNTRIES AND TERRITORIES