NIUE CLIMATE CHANGE PROJECT

Niue Climate Change Project

PHASE II – GF/2010-01-05

Workshop on Technology Needs Assessment and Technology Transfer Projects

Prepared by

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New Zealand

UNEP

May 20, 2003

Summary for Policy and Decision Makers

As a follow up to the Workshop on National Policy for Technology Transfer, a second workshop was convened as a first step in implementing that policy. The workshops are part of the activities proposed in Niue's First National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), and help meets commitments to that Convention.

The workshop provided an opportunity to discuss the technology needs assessment with relevant stakeholders, and to build consensus on the priority technologies and the strategies to acquire them. The workshop also helped identify the necessary information related to technological cooperation with international donors and the ways in which they can contribute to financing technology transfer projects. Discussions resulted in identification of the means by which priority technologies can be used and/or supported by international aid and through other funding organizations.

Participants reviewed national development priorities, the findings in Niue's First National Communication to the UNFCCC and other relevant information. Participants concluded that a technology needs assessment should focus on the following sectors:

- Agriculture;
- Tourism; and
- Fisheries.

Cross cutting issues should also be taken into consideration, including:

- Water security - supply and quality;
- Energy security - supply, efficiency and conservation;
- Food security;
- Awareness raising, education and training;
- Financing technology transfer, uptake and ongoing operations and maintenance; and
- The enabling environment for technology transfer and uptake.

A framework for technology transfer and uptake projects to help address the climate change concerns of Niue, and to contribute to national sustainable development, was developed. Possible funding sources for the identified projects include:

- *Water Project* – Special Climate Change Fund (or Adaptation Fund);
- *Climate Prediction* – Research, Small Grants Programme or Spec. CC Fund; and
- *Energy* – Operational Programme 5 (Removal of Barriers to Energy Efficiency and Energy Conservation).

Discussions should be held with UNEP regarding potential funding sources as details for the Special Climate Change Fund and the Adaptation Fund have yet to be finalised by the UNFCCC.

A number of barriers to successful technology transfer and uptake were identified, along with ways in which they might be addressed.

Workshop participants recommended the following, for consideration by Government:

- Establishment of a Technology Transfer Working Group (TTWG), consistent with the proposed terms of reference; and
- Approval of a Technology Transfer Policy for Niue, as drafted in the previous workshop.

These activities would provide the foundation for successful implementation of the technology transfer and uptake projects that will help address the climate change concerns of Niue, and also contribute to national sustainable development.

1. Background

As a follow up to the Workshop on National Policy for Technology Transfer, a second workshop was convened as a first step in implementing that policy. The workshops are part of the activities proposed in Niue's First National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), and help meets commitments to that Convention.

The Workshop on Technology Needs Assessment and Technology Transfer Projects was held in order to engage relevant stakeholders in the technology needs assessment and to build a consensus on the priority technologies and the strategies to acquire them.

2. Workshop Programme

The workshop was held on May 21 and 22, 2003 at the Hotel Niue, Niue. The agenda is provided in Annex 1.

3. List of Participants

The list of participants is provided in Annex 2.

4. Welcome and Introductions

The Climate Change Coordinator for Niue, Mr David Poihega, welcomed participants to the workshop, thanked them for their participation and provided brief introductions.

Mr. Poihega noted that a second workshop was being held in order to discuss the technology needs assessment with relevant stakeholders, and to build consensus on the priority technologies and the strategies to acquire them. The workshop will provide the necessary information related to technological cooperation with international donors and the ways in which they can contribute to financing technology transfer projects. Discussions will identify how the identified priority technologies can be used and/or supported by international aid and through other funding organizations.

5. Technology Needs Assessment and Transfer, in the Context of the UNFCCC and SIDS

Prof. John Hay presented an overview of technology needs assessment and transfer, with special reference to the UNFCCC and to the circumstances of small island developing states such as Niue.

He reminded participants that a technology needs assessment is a set of country-driven activities that identify and determine the mitigation and adaptation technology priorities. They involve different stakeholders in a consultative process to identify needs, opportunities, barriers and measures to address these barriers, through both integrated and sectoral analyses (Figure 1).

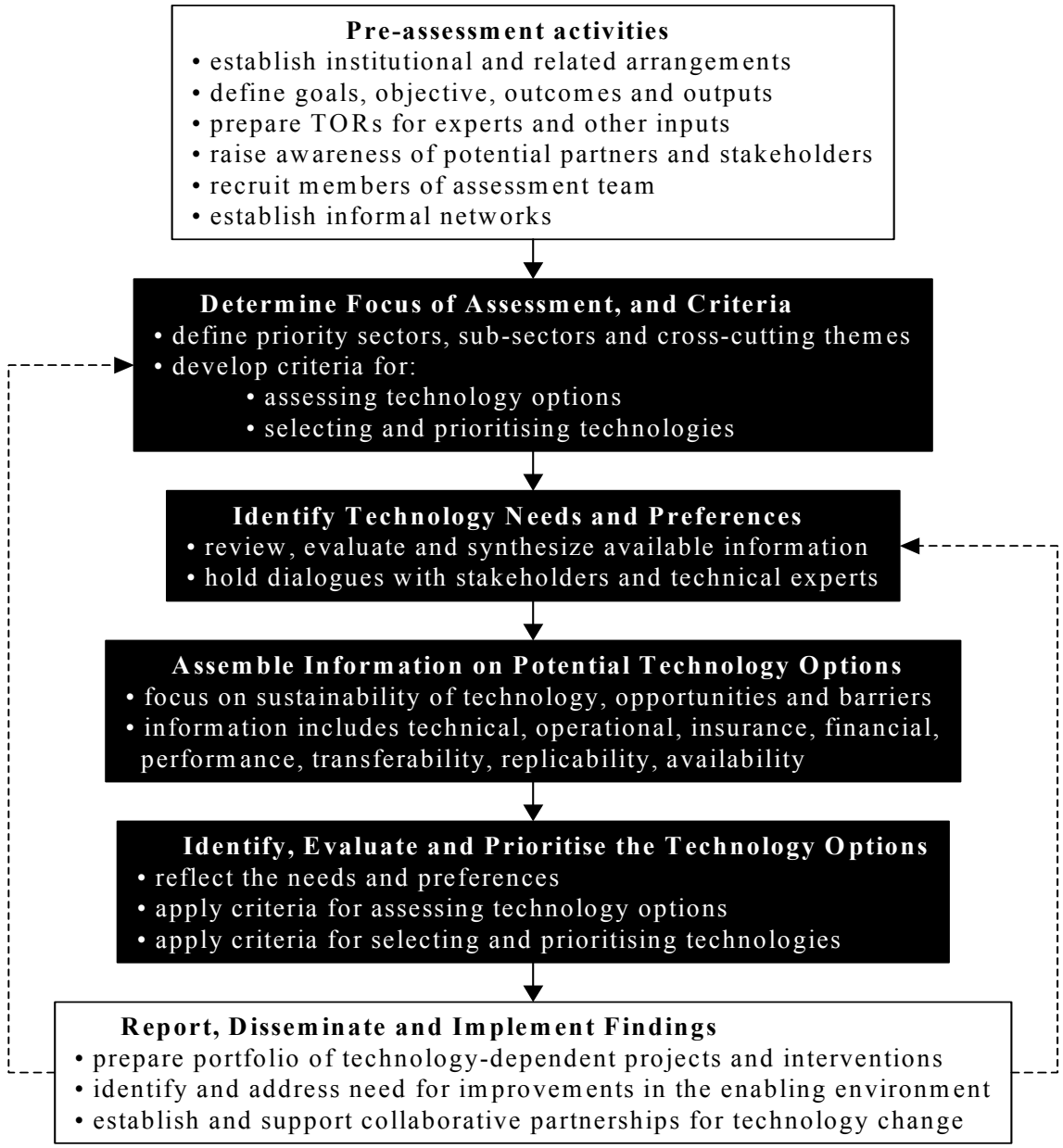


Figure 1. The technology needs assessment process.

Prof. Hay also emphasised the breadth of technologies that should be considered in a needs assessment (Figure 2) and the importance of improving the environmental performance of technologies (Figure 3).

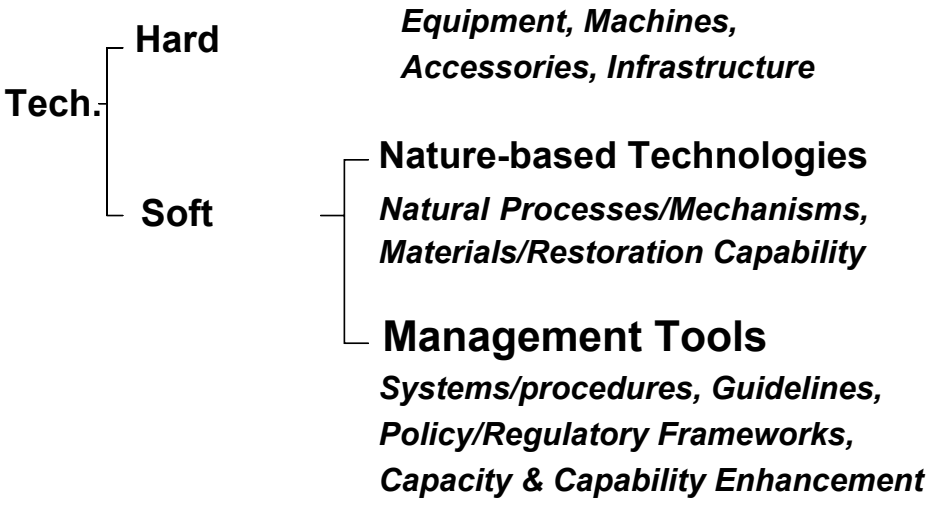


Figure 2. Technology typology.

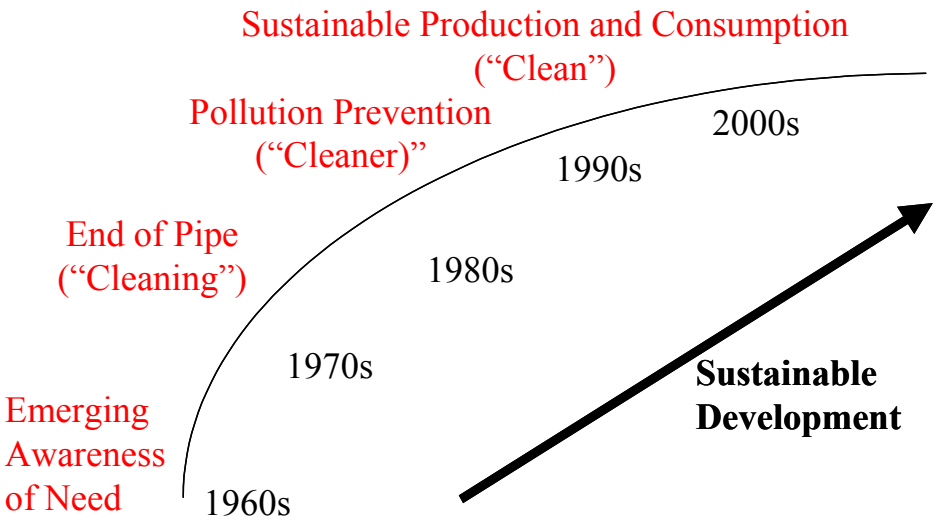


Figure 3. The evolution to sustainable technologies

The key features of both technology development and application were described, with the importance of the inter-linkages being given particular attention (Figure 4).

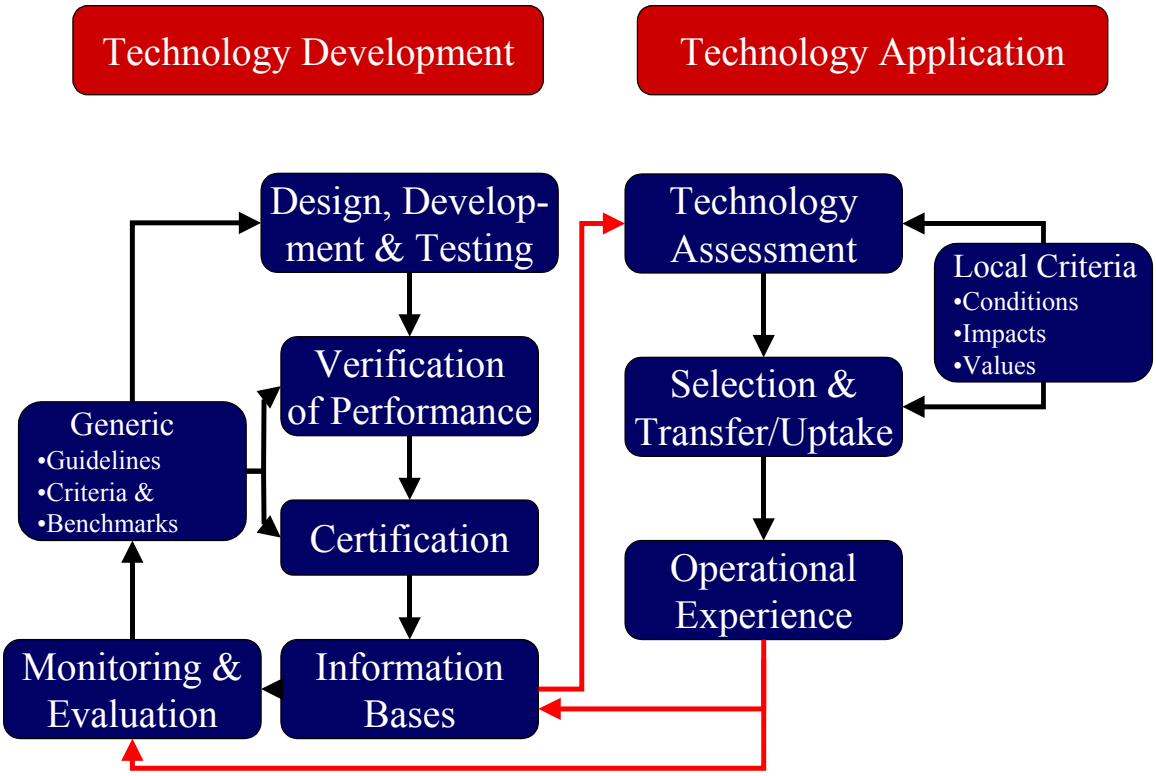


Figure 4. The key steps in technology development and application.

Technology transfer is the suite of processes encompassing all dimensions of the origins, flows and uptake of know-how, experience and equipment amongst, across and within countries, stakeholder organizations and institutions (Figures 5 and 6). These multiple dimensions of technology transfer mean there are many potential stakeholders, including innovators, developers, owners, suppliers, buyers, recipients, users, consumers, financiers, donors, governments (including policy makers and regulators), insurers, international institutions, and non-governmental and community-based organizations. The stakeholders involved in any specific transaction will depend on the type and status of the technology and the associated nature of the transfer pathway.

Prof. Hay stressed the importance of the enabling environment for technology transfer. This includes such aspects as:

- Fostering innovation, applied research and development;
- Developing and enhancing human capabilities;
- Ensuring macroeconomic policies are supportive of technology transfer;
- Enhancing availability of, and access to, financing;
- Strengthened legal systems, including protection of property rights;
- Accessible and credible demand-driven information;

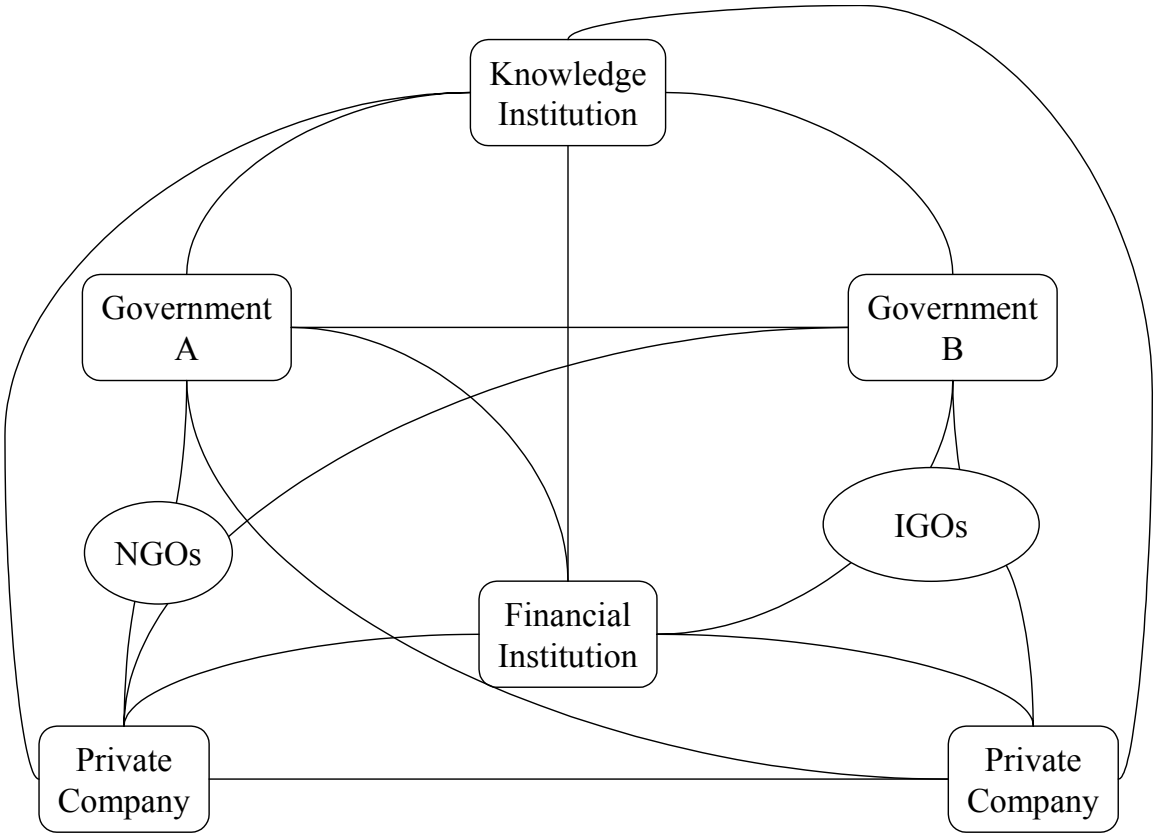


Figure 5. The technology transfer system (after UNEP, 2001).

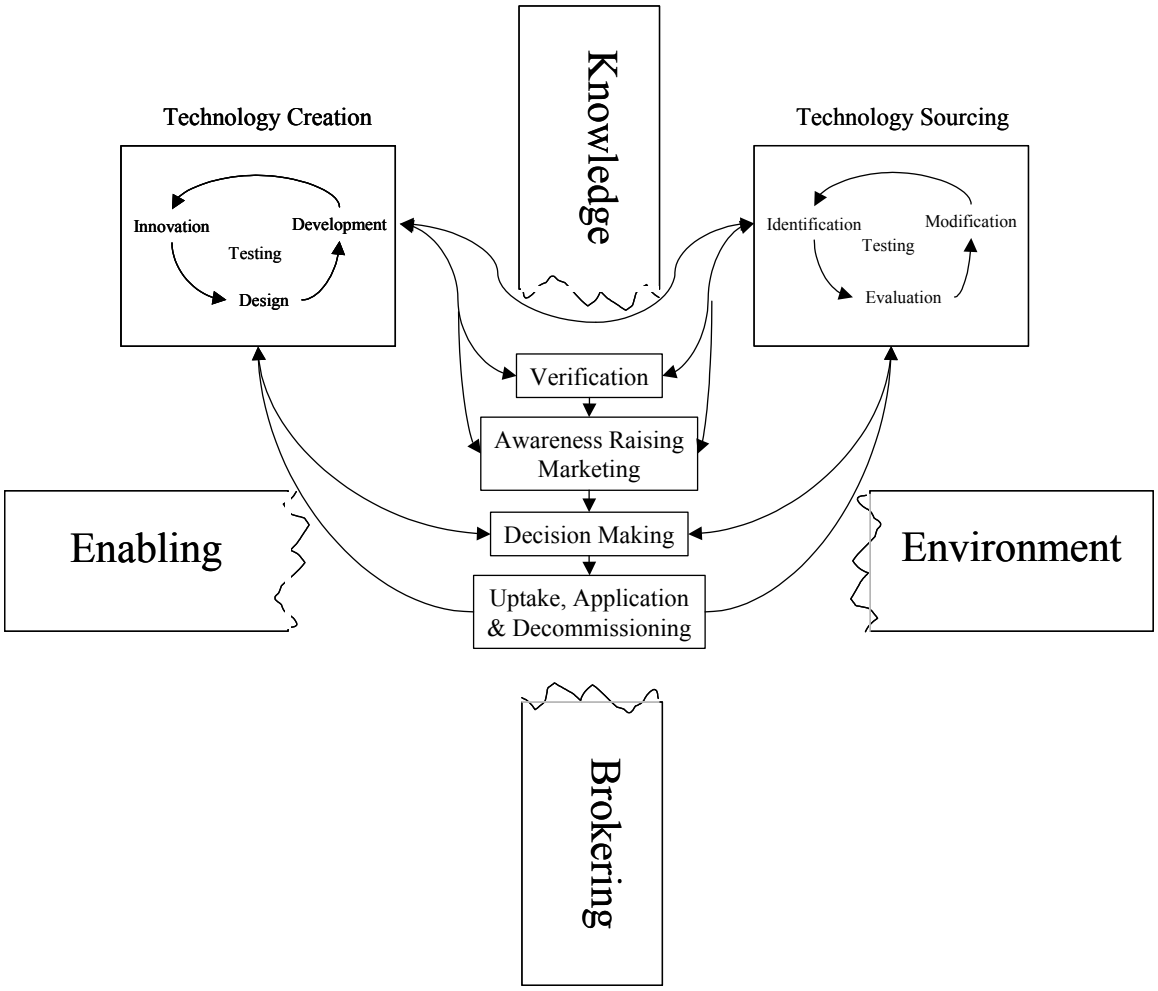


Figure 6. The technology transfer process.

- Sustainable markets for environmentally sound technologies; and
- Access to decision support tools and related methodologies.

Factors that been shown to foster technology transfer include:

- An open and competitive market;Comprehensive and credible specifications on technology performance;Financiers who are at least technology neutral;The most cost competitive technology also has the most favourable environmental and social performance specifications and Policy risks are addressed.

The UNFCCC has established an Expert Group on Technology Transfer to provide advice to Parties to the Convention. The Group is undertaking such activities as technology needs assessments, enhancing information flows, improving enabling environments, capacity building and developing mechanisms for technology transfer. A country-driven approach is emphasised, with cooperation amongst the private sector, governments, donors, research and other institutions, and NGOs.

Working through the Global Environment Facility (GEF), the UNFCCC plans to support technology transfer in two main ways:

- Under the Kyoto Protocol
  - Clean Development Mechanism;
  - Mitigation, including emissions trading;
  - Adaptation Fund;
- Via a Special Climate Change Fund, with support for:
  - Adaptation;
  - Technology transfer;
  - Energy, transport, industry, forestry and waste management; and
  - Activities to assist developing country Parties in diversifying their economies.

Further details on GEF support for adaptation are given in Figure 7.

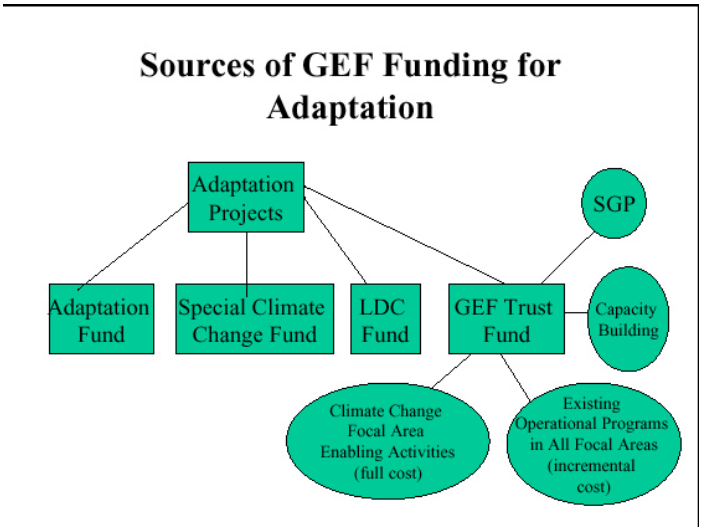


Figure 7. Mechanisms the Global Environment Facility uses to support adaptation.

The GEF provides assistance for mitigation and adaptation through:

- Medium-sized projects;
- Full-sized projects;
- Small grants program (SGP);
- Enabling activities;
- Targeted research; and
- Project preparation and development facility grants (PDF-A, B and C).

Proposals are being considered for expanded GEF support for capacity building. The medium- and full-sized project funding support activities in the GEF Operational Programmes:

- Biodiversity;
- Climate Change;
  - Remove barriers to energy efficiency and conservation;
  - Promote adoption of renewable energy;
  - Reduce long-terms costs of low GHG emitting energy technologies;
  - Promote environmentally sustainable transport;
- International Waters;
- Multi-focal:
  - Integrated ecosystem management;
  - Land Degradation; and
- Persistent Organic Pollutants.

6. Identification of Typical Technology Transfer Stakeholders for SIDS

Prof. Hay provided an overview of the typical stakeholders, including their motivations and the technology-related policies and decisions they might invoke. These include:

- Recipient Governments (National, Local)
  - Motivations
    - Development and environmental goals
    - Protection of assets
    - Energy security
  - Influential decisions/policies
    - Tax, import policies
    - Regulations
    - Capacity building policies
    - Direct credit provision
- Private Sector Businesses
  - Motivations
    - Profits
    - Market share
    - Return on investment
  - Influential decisions/policies
    - Marketing and procurement decisions
    - Capital investment decisions
    - Skills/capability building policies

        - Information brokering
- Communities/Individuals
    - Motivations
        - Welfare
        - Utility
        - Expense minimization
    - Influential decisions/policies
        - Purchase decisions
        - Information gathering decisions
        - Assessments of information credibility
- Donors
    - Motivations
        - Development and environmental goals
        - Return on investment
        - Compliance with institutional policies
    - Influential decisions/policies
        - Project selection and design criteria
        - Investment decisions
        - Technical assistance design and delivery
        - Procurement requirements
        - Conditional reform requirements
- Regional/International Organisations
    - Motivations
        - Development and environmental goals
        - Policy formulation
        - International agreements and dialogues
    - Influential decisions/policies
        - Policy and technology focus
        - Choices regarding information dissemination
        - Selection of partners and participants
        - Allocation of resources
- Media and Public Groups
    - Motivations
        - Information distribution
        - Education
        - Collective decisions
        - Collective welfare
    - Influential decisions/policies
        - Acceptance of information for distribution
        - Promotion of selected technologies
        - Content of educational/awareness programmes
        - Lobbying for technology related policies
- Financial Institutions

- o Motivations
  - • Return on investment
  - • Co-benefits
  - • Compliance with institutional policies
  - • Support member interests
- o Influential decisions/policies
  - • Investment selection criteria
  - • Investment decisions
  - • Conditional reform requirements
  - • Information brokering

The presentation was followed by a discussion on technology transfer stakeholders for Niue, addressing the following questions:

- Who are they?
- What are their motivations?
- Which decisions/policies are relevant to TT?

7. Regional Developments Related to Technology Transfer and Project Prospects for Niue

Prof. Hay provided an overview of regional activities related to transfer and uptake of renewable energy projects, energy efficiency and conservation projects, adaptation projects and projects being contemplated as part of the Clean Development Mechanism (CDM).

The preliminary results of scoping CDM projects in the Pacific were presented. These showed widely ranging values for the certified emissions reductions, as follows:

- Reforestation of Logged Sites – Solomons
  - 4,000 ha per year reforested
  - Enhanced sink of 30,900 tCO2/year
  - Cert. Emissions Reduction. $US92,700/year
- Three Wind Turbines – Niue
  - Cert. Emissions Reduction. $US1,775/year
- Improved Efficiency of Power Network – Tonga
  - Cert. Emissions Reduction. $US250,240/year
- Improved Efficiency of Fossil Power Plant – Tonga
  - Cert. Emissions Reduction $US98,412/year

Further information is provided in Annex 3.

8. Discussion of Technology Needs Assessments for Niue

This discussion reviewed national development priorities, the findings in Niue's First National Communication to the UNFCCC and other relevant information. Participants concluded that a technology needs assessment should focus on the following sectors:

- Agriculture;

- Tourism; and
- Fisheries.

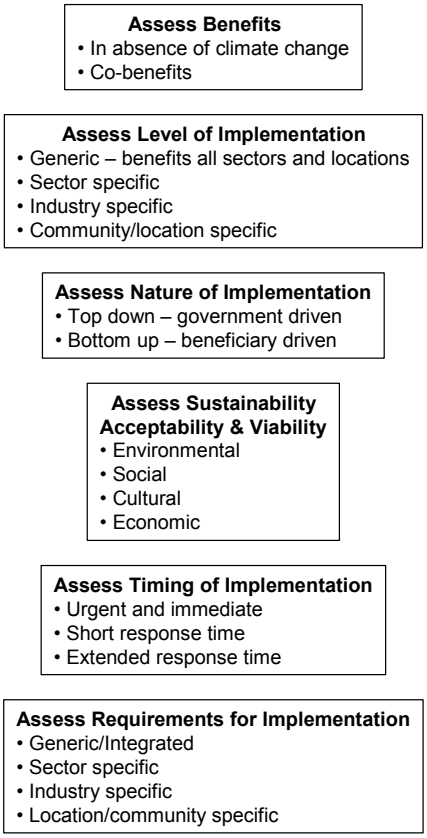
Cross cutting issues should also be taken into consideration, including:

- Water security - supply and quality;
- Energy security - supply, efficiency and conservation;
- Food security;
- Awareness raising, education and training;
- Financing technology transfer, uptake and ongoing operations and maintenance; and
- The enabling environment for technology transfer and uptake.
- Integrated Coastal Management Activities.

9. Priority Technologies and the Strategies to Acquire Them

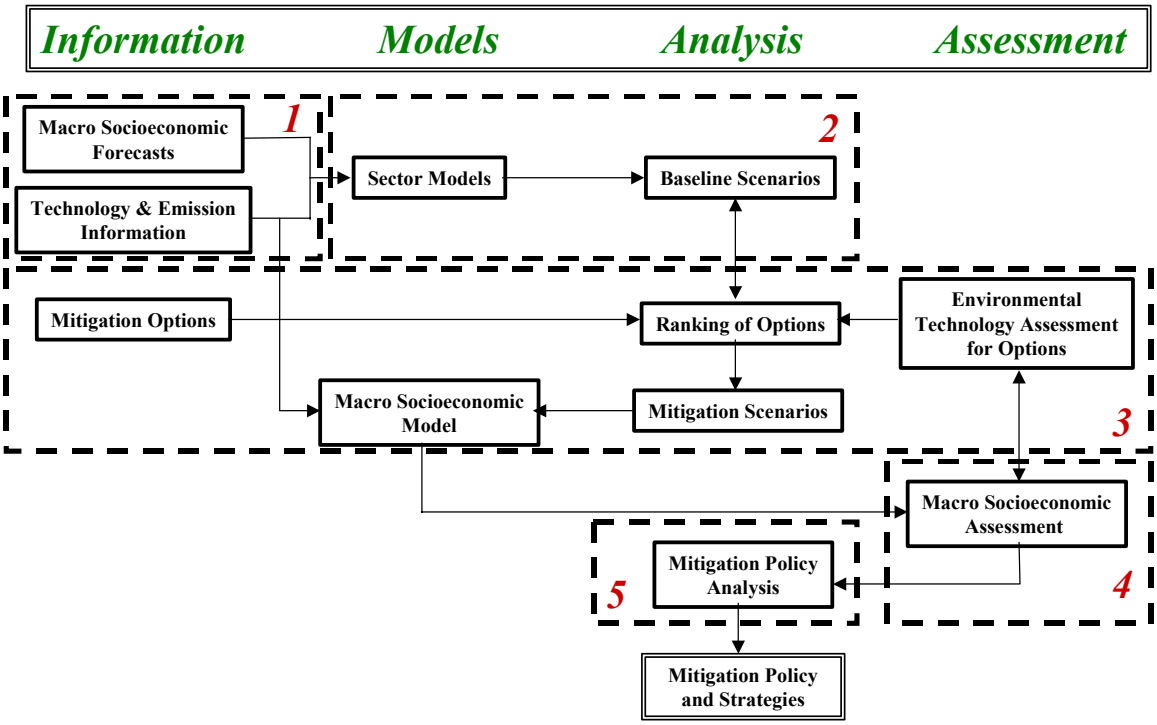
Prof Hay provided an overview of the procedures that could be used to determine priorities for the transfer of mitigation and adaptation technologies (see Figures 8 and 9 and Annex 4).

Figure 8. Factors that should be considered in prioritizing adaptation technologies.



10. Determining Priority Technologies and the Strategies to Acquire Them

Discussions by workshop participants resulted in a consensus on priority technologies and agreement that technology transfer projects should be developed, for



funding consideration by the United Nations Environment Programme (UNEP) and GEF, with co-financing by donor countries and relevant organisations.

The results of the discussion are summarised in Figure 10.

Figure 9. The five steps of in assessing and prioritising mitigation technologies.

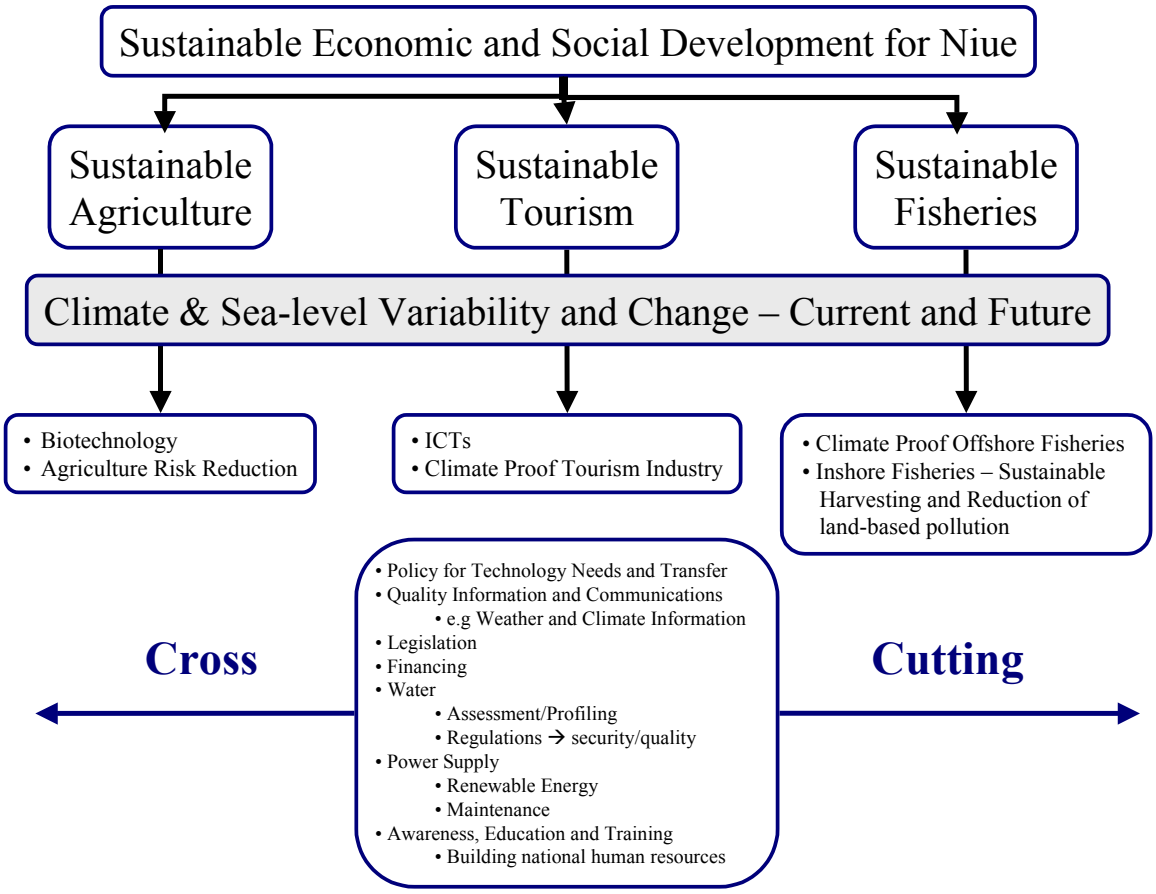


Figure 10. Framework for technology transfer and uptake projects to help address the climate change concerns of Niue and to contribute to national sustainable development.

11. Project Financing

Prof. Hay outlined a possible process for securing project funding through GEF and other sources:

- Decide the funding sources and funding options:
  - full-sized project;
  - medium-sized project;
  - enabling activity project;
- Prepare project concept;
- Submit concept to an Implementing Agency (e.g. UNEP) andImplementing agency will inform Niue if the concept should be developed into a fuller project proposal (PDF normally will be awarded).

He also advised on possible funding sources:

- *Water Project* – Special Climate Change Fund (or Adaptation Fund);

- *Climate Prediction* – Research, Small Grants Programme or Spec. CC Fund; and
- *Energy* – Operational Programme 5 (Removal of Barriers to Energy Efficiency and Energy Conservation).*Integrated Coastal Zone Management Strategy.*

Discussions should be held with UNEP regarding potential funding sources as details for the Special Climate Change Fund and the Adaptation Fund have yet to be finalised.

Prof. Hay also indicted some of the problems GEF often encountered with the project concept papers submitted by countries. These include:

- Failure to identify and quantify project's global benefits (not necessary to quantify for biodiversity);
- Failure to link the proposed project to the existing framework of national sustainable development and environmental protection;
- Insufficient attention to the national/regional 'baseline' and failure to raise significant co-financing to bolster the baseline, where needed;
- Failure to identify the root causes of the problem, and lack of a logical sequence of activities to address these causes at their source;
- Lack of nexus (i.e. congruence) between the project and GEF focal areas;
- Failure to ensure full participation of all key stakeholders;
- Inconsistency with relevant Conventions, or ineligibility under the Conventions;
- Lack of mechanisms or incentives for sustainability;
- Inappropriate or unrealistic time frame - either too short or too long;
- Lack of recognition of poor policy or institutional structure within the country;
- Inadequate provision for monitoring and evaluation;
- Failure to document or substantiate scientific claims; and
- Failure to clearly analyze why technology (climate change) or conservation (biodiversity) is not taking place – lack of identification of barriers/root causes.

13. Key Technologies, and Procedures and Costs for Acquisition

Participants discussed the technologies relevant to the identified technology transfer projects, and reviewed the procedures and costs for acquisition. It was agreed that there was a reasonable awareness regarding these matters.

Prof. Hay provided a listing of Web sites (Annex 5), through which technology developers, providers, assessors and other key technology players could be accessed.

14. Identifying Barriers and Determining Possible Solutions

In a wide-ranging discussion the following barriers were identified, along with ways in which they might be addressed:

- Shortage of funds for acquisition, operations and maintenance;
- Lack of necessary human resources:
  - Technical expertise;
  - Maintaining continuity in expertise;
- Shipping costs and frequency, including spare parts;
- Problems lightering large items from the ship;
- Lack of performance information on potential technologies:
  - Credibility of the information;
  - Lack of information to show suitability for application in Niue;
- Awareness and viewpoints of politicians – often have short term view;
- High operating costs – e.g. power;
- Maintenance difficult due to high costs and limited access to spare parts;
- Difficulty accessing specialist expertise, and it is expensive;
- High absolute and relative costs of technologies;
- Technologies often not warranteed
- Difficult getting service under warrantee;
- Requirements for labelling (e.g. environmental performance) of technologies difficult to introduce in a small country;
- Dumping of obsolete technologies;
- Often provided with low quality substitutes rather than original technology;
- Financial assistance tied to donor country – expensive and limits choice;
- High transaction costs (insurance etc);
- Limited choices of technologies;
- Limited or zero in-country capacity for technology innovation, modification and testing, including adapting traditional technologies to suit current needs and circumstances;Restricted access to information on available technologies which have the potential to meet identified needs;Lack of appropriate levels of awareness, motivation and empowerment within the public and private sectors and in civil society;
- Limited private sector, including financial and insurance institutions, which will engage in and support technology transfer and uptake;
- Restricted access to information related to guidelines, codes of practice and standards;
- Limited ability to participate in, and benefit from, verification and certification programmes;
- Macro-economic policies that impede the successful transfer and uptake of environmentally sound technologies;
- Absence of a competitive and open market that encourages ongoing, replicable technology transfers and effective operation of environmentally sound technologies in a transparent, accountable and technically competent manner;
- Low participation in industry associations and networks of organizations and institutions involved in generating, diffusing and utilizing technologies; and
- Need options with long operating lifetimes due to difficulties with maintenance and replacements.

15. Future Action Plan

Actions to follow the workshop were discussed and the following were agreed:

- Prof. Hay will provide Mr Poihega with relevant information, including format for preparing a medium-sized project concept paper;
- Mr Poihega will:
  - Seek government approvals to establish an Executive Technology Transfer Working Group (ETTWG) and for Technology Transfer Policy for Niue;
  - Inform UNEP of plans and seek additional advice;
  - Consult further with TTWG and stakeholders;
  - Prepare draft project concept papers, and circulate for comment;
- Prof. Hay will also review draft concept papers and advise on improvementsOnce finalised the concept papers will be submitted by TTWG to government, and thence to UNEP;
- Project concepts will be approved and funds (PDF) for proposal development will be allocated;
- The project proposals will then be prepared and submitted by the Government to GEF, through UNEP;
- Once the projects are approved and funds are released, the projects can be implemented.

16. Terms of Reference for Working Group

The workshop participants recommend the following terms of reference for the ETTWG:

- Chair – CC Project Coordinator;
- Vice Chair – Niue Met. Service
- Secretary – to be determined;
- Membership:(Shall always consist of four members at any one time)
  - Climate Change Project Coordinator
  - Niue Met. Service Manager
  - Water Supply Manager
  - Manager EPS

TERMS OF REFERENCE

- Period of membership – 1 year, renewable;
- Quorum – 2 members of TTWG;
- Meeting Schedule – Monthly;
- Members' Expenses – paid on per meeting basis;
- Function of ETTWG – to advise on, and implement, the National Policy on Technology Transfer, as developed in the National Workshops on Technology Transfer, May, 2003.To note that the other key sectors are Tourism, DAFF, EPDSU, NIOFA and the GEF focal Point and to be included into the ETTWG as appropriate.**17. Close of Workshop**

Several workshop participants expressed their appreciation for personal contributions via presentations and discussion. These helped make the workshop a success.

As part of his comments while closing the workshop, Mr Crossley Tatui thanked

all the participants for their important contributions to the discussions and noted his pleasure with the success of the workshop.

Annex 1

Workshop Programme

	WEDNESDAY 21ST MAY 2003 WORKSHOP BEGINS	
TIME	**ACTIVITY**	**FACILITATOR**
9.00am	Brief Overview of the Nature of the Second Workshop	D. Poihega
9.10am	An understanding of Technology Transfer within the UNFCCC and how it relates to developing countries and in particular small island states.	John Hay
9.30am	Questions & Answers	
9.35am	Experiences of other similar countries like Niue with regards to technology needs assessment in relation to relevant stakeholders	John Hay
9.55	Questions and Answers	
10.00am	**Tea Break**	
10.15am	Regional Developments with respect to Technology Transfer and future prospects through projects or other means for small island states like Niue	John Hay
10.30 am	Questions and Answers	
10.35am	Discussion of Technology Needs Assessments for Niue	Plenary
11.00am	Determine Priority Technologies and Strategies to acquire them	John Hay with Plenary
12.00pm	**LUNCH TIME**	
1.00pm	Identify most effective mechanisms to maintain sustainable and market development providing necessary information related to technological cooperation with international donors and contribute to project financing	John Hay with Plenary
2.00pm	Discuss possible ways of networking with concerned scientific and business organizations	John Hay with Plenary
3.00pm	Discuss possible ways of how the identified priority technologies can be used and/or supported by international aid and charitable organizations	John Hay with Plenary
4.00pm	**CLOSEDOWN DAY 1 OF WORKSHOP**	
	THURSDAY 22ND MAY 2003 DAY 2 OF WORKSHOP	
9.00am	Summary of Day1 Proceedings	David/John Hay
9.30am	Discussion on establishing a National Framework for assessment of Technology Transfer	John Hay & Plenary
10.00am	**Tea Break**	
10:15am	Discussion on key technologies for adaptation to Climate Change and identification of sources and suppliers for the technologies with emphasis on determining procedures and costs for technology acquisition.	John Hay and Plenary
11.30am	Identifying Barriers and determining possible solutions to technology transfer.	John Hay and Plenary
12.00pm	**LUNCH TIME**	
1.00pm	Determining future action Plan for Technology Transfer for Niue	
2.00pm	Establish a National Working Group Committee for Technology Transfer with a Terms of Reference for this Committee.	
3.00pm	Summary of Day 2 proceedings	David/John Hay
3.30pm	Final Questions and Answers	Plenary
3.45pm	Housekeeping Announcements	David
3.50pm	**Official Closing Remarks for Workshop, Day Two.**	David/ C.Tatui
4.00pm	**CLOSE**	

Annex 2

List of Workshop Participants

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Annex 3
Presentation 04 Regional and Project Initiatives v1.ppt

Regional Initiatives Related to Tech. Transfer

Possible Project Initiatives

Energy Technologies

- European Union's Lomé II Pacific Regional Energy Program (PREP)
  - for the eight ACP member countries
  - two main objectives:
    - **to reduce the dependence of the Pacific ACP island states on petroleum fuels through the promotion and use of imported technologies which would harness indigenous RE sources**
    - **assessing these technologies in terms of their technical and economic suitability for the region**
  - In a 1988 redesign unspent PREP funds were reallocated to three new activities (electric utility loss reductions, photovoltaic "follow-up" and biomass "follow-up")

Energy Technologies

- **Small Energy Projects Program (SEPP)**
  - More than 75% of the program funds are for RE projects.
- **Climate Change: Australian Pilot-Phase Joint Implementation (JI) Program**
  - Under this program, a 10 kW grid-connected PV system has been installed at the Fiji Electricity Authority
- **Pacific-Danish Environmental Education and Action Program**
  - Includes a grid-connected wind turbine demonstration project (200-300 kW) in the Cook Islands
  -

Energy Technologies

- **Ocean Energy and Geothermal Energy Resources**
  - SOPAC's ocean energy program aims to provide technical data and advice on alternative ocean energy resources, particularly OTEC, wave and tidal energy
- **Secretariat of the Pacific Community (SPC)**
  - The Rural Energy Development Program, the SPC provides technical assistance and advice in appropriate technologies, with special reference to new and RE sources suitable for rural areas

Energy Technologies

- Pacific Rural Renewable Energy France-Australia Common Endeavour (PREFACE)
  - Focus is on small scale renewable energy technologies appropriate for the Pacific Islands
  - Three main areas:
    - **Renewable energy**
    - **Energy efficiency**
    - **Rural energy/technology development**
  - Activities
    - **Building local capacities**
    - **Networking**
    - **Targeted technical and management training**
    - **Demonstration projects**

Pacific Islands Renewable Energy Project

- Promotes widespread implementation and, ultimately, commercialisation of RE technologies through establishment of a suitable enabling environment
- Design, development and implementation of appropriate policies, strategies and interventions addressing the fiscal, financial, regulatory, market, technical and information barriers to RE development and utilization
- Development of interventions for strengthening of the relevant institutional structures and national capacity for the coordination and the sustainable management (design, implementation, monitoring, maintenance, evaluation and the marketing) of RE initiatives

ADB's REACH*

- Since early 1990s ADB has been at the forefront in assisting Asia and the Pacific region to address climate change through various (regional) technical assistance programs and lending operations.
- ADB recently attracted increasing interest of various donors (such as Denmark, Canada, the Netherlands) for grant funding of its program on climate change, renewable energy and energy efficiency (**REACH)**
- Under the REACH program ADB administer 3 grant funds:
  - the Netherlands Cooperation Fund for Promotion of Renewable energy, Energy efficiency and Greenhouse gas Abatement (PREGA) ($ 4.5 million)
  - the Canadian Cooperation Fund for Climate Change – GHG abatement, carbon sequestration and adaptation ($3.2 million)
  - the Danish Cooperation Fund for Renewable Energy and Energy Efficiency in Rural Areas ($ 3.5 million)

Proposed Small Scale CDM Project in Samoa

Certified Emissions Reductions

- 1,164 CERs/year (US$ 5820/year)

Annual reduction in electricity costs
- $US172,500/year

Capital Costs
- $US723,500

Valuing Emissions Reductions

- Reforestation of Logged Sites – Solomons
- 4,000 ha per year reforested
- Enhanced sink of 30,900 tCO2/year
- Cert. Emissions Redtn. $US92,700/year
- Three Wind Turbines – Niue
- Cert. Emissions Redtn. $US1,775/year
- Improved Efficiency of Power Network – Tonga
- Cert. Emissions Redtn. $US250,240/year
- Improved Efficiency of Fossil Power Plant – Tonga
- Cert. Emissions Redtn $US98,412/year

Possible Pacific-Japan CDM Projects - Niue

ADB's CLIMAP*

- **ADB's adaptation program for the Pacific (CLIMAP) will assist PDMCs in:**
  - enhancing countries' adaptation capacities and "resilience" to climate change and variability including changes in extreme events.
  - preparing to prevent and address the adverse effects of global climate change, particularly sea level rise and changing climate variability in coastal and marine areas.
- **through:**
  - vulnerability assessment, adaptation planning and policy development, "resilience" building linked to project level adaptation, risk prevention and management.
  - preparation/design of adaptation measures at the project level and capacity building, including institutional strengthening and human resource development, for adaptation at the project level.
- **Focus: project level adaptation**

Regional Adaptation Fund

- Objective is to secure additional and sustainable funding for adaptation in PICs
- Proposal under active consideration
- Issues include:
  - Additionality of funding
  - Sinking or endowed fund
  - Criteria for eligibility and access

Annex 4

Please print (6 slides per page) and insert

Presentation 05 Determining Priority Technologies v1.ppt

Determining Priority Technologies

Strategies for Acquisition

Criteria for Assessing Options

- Environmental requirements, including addressing climate change concerns through adaptation and mitigation;
- Social goals, as reflected in the National Development Plan and such documents as the Health Master Plan;
- Technological considerations, such as penetration, reliability, ease of uptake and replicability;
- Economic goals, as reflected in the National Development Plan and other relevant documents.

Five Steps of Mitigation Analysis Transfer Pathways of Relevance to SIDS

- Direct purchases
- Foreign direct investment
- Licensing
- Sale of turn-key plants
- Joint ventures
- Multilateral development lending
- Development aid and other grant financing

Direct Purchases

Key factors influencing choice of pathway

- Import duties
- Advertising
- Compatibility of technology
- Distributor capabilities
- After sales service and training
- Standards and certification
- Insurance and product liabilities

Multilateral Development Lending

Key factors influencing choice of pathway

- Need for/viability of structural economic reforms
- Guarantees and credit worthiness of government and borrowers
- Rates of return from investments
- Procurement procedures

Development Aid and other Grant Financing

Key factors influencing choice of pathway

- Donor country political agenda
- Multilateral agency priorities
- Capacity of recipient country to make informed choices
- Extent of stakeholder involvement in technology investment decision

Strategies for Technology Acquisition

Opportunies related to:

- Direct purchases
- Foreign direct investment
- Licensing
- Sale of turn-key plants
- Joint ventures
- Multilateral development lending
- Development aid and other grant financing

Annex 5

Climate Change Technologies – Web Resources

AGORES
The official EU Web site for renewable energy sources. This site aims to be the most extensive renewable energy knowledge centre and gateway for Europe. It has been designed to act as one of the primary vehicles to promote the European Commission's Campaign for Take-Off.

Asia-Europe Environmental Technology Centre (AEETC), *Pathumthani, Thailand*
Matchmaking for concerted and supportive environmental action is a first important role for AEETC. The center should assist environmental institutes in the ASEM member countries to identify opportunities of joint environmental project initiatives and catalyze those involved in initiating them.

ATLAS Project
The ATLAS Project a major initiative aimed at establishing an information base to support energy Research and Technological Development (RTD) strategy, which has been undertaken by the European Network of Energy Agencies (EnR) on behalf of Directorate General XVII of the European Commission.

Australian Consortium of the IEA GHG Programme

Australian Renewable Energy Website
This site is published by the Australian Greenhouse Office to promote the use of renewable enrgy and develop the Australian Renewable Energy Industry.

Centre for Alternative Technology (CAT), *Powys, UK*
CAT is concerned with the search for globally sustainable, whole and ecologically sound technologies and ways of life. Within this search the role of CAT is to explore and demonstrate a wide range of alternatives, communicating to other people the options for them to achieve positive change in their own lives.

Centre for Enivronmentally Sound Technology Transfer (CESTT), *Beijing, China*
Centre for Environmentally Sound Technology Transfer (CESTT), established in 1997, works to promote the transfer and adoption of EST by forming a bridge between policy makers, technology suppliers, technology developer, and Chinese industry, in particular small and medium-sized enterprises (SMEs). (*article*)

Centre for Science and Environment (CSE), *India*
The Centre for Science and Environment is one of India's leading environmental NGOs with a deep interest in sustainable natural resource management. CSE's strategy of "knowledge based activism" has won it wide respect and admiration for the quality of its campaigns, research and publications which are trying to bring about change in an extremely difficult situation.

Centre for the Analysis and Dissemination of Demonstrated Energy Technologies (CADDET), *UK*
CADDET Renewable Energy gathers information on full-scale commercial projects which are operating in the member countries. The CADDET programme covers the full range of renewable energy technologies.

Center for Energy Efficiency and Renewable Technologies (CEERT),
CEERT is a unique collaboration of major environmental organizations, public interest groups and clean technology companies working to achieve a more sustainable energy future. By aggregating the expertise and resources of our coalition members from both the public interest and business sectors, CEERT has emerged as a compelling force on behalf of clean, renewable energy resources and energy efficiency measures in key policy making debates on the local, state and federal level.

Centre for the International Transfer of Environmental Technologies (ITUT), *Leipzig, Germany*
The main objective of ITUT GmbH is to support the German environmental technology sector to successfully establish links to international markets. At the same time, ITUT provides pertinent information on German environmental technologies to interested potential foreign partners. In this process, German environmental technology can make a measurable contribution to a sustainable and environmentally-friendly development policy in target countries. Particular emphasis is paid to small and medium-sized companies.

CityNet (The Regional Network of Local Authorities for the Management of Human Settlement), *Yokohama, Japan*
CityNet is a network promoting local urban improvement initiatives in the Asian-Pacific region. CityNet encourages higher standards of sanitation, innovation in environmental management, and clean, non-polluted city environments. CityNet seeks to relieve urban slums, promote equitable distribution of resources, and encourage community participation.

City of Kitakyushu- Research & Development, *Kitakyushu, Japan*
Creating a City of the Future through Technology and Human Resource Development

CSIRO Built Environment, *Victoria, Australia*
Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a world-class research organisation supporting Australia's industry needs.

Clean Edge, Inc., *California, USA*
Clean Edge, Inc., based in Oakland, California, is a publishing and consulting firm that serves the clean-tech marketplace. Its mission is to help investors, industry, and society understand and profit from the emerging clean-tech revolution.

Climate Ark
Climate Change Search Facility

Climate Change Information Center (CCIC), *Quezon city, Philippines*
The CCIC is a focal point for national and regional information sharing and capability building on climate change. We aim to promote awareness and help build the capability needed to address the complex issue of climate change through information, education, and communication.

Climate Technology Initiative (CTI)

Consortium for Energy Efficiency (CEE), *MA, U.S.A.*
A national, non-profit public benefits corporation, promotes the manufacture and purchase of energy-efficient products and services. Our goal is to induce lasting structural and behavioral changes in the marketplace, resulting in the increased adoption of energy-efficient technologies.

Cool Companies, *Virginia, USA*
As the network for GETF's Center for Energy & Climate Solutions (CECS), Cool Companies offers practical advice, tools and technologies to help organizations reduce greenhouse gas emissions.

CSIRO, Division of Energy Technology

CTTS - Vehicle Systems Analysis Team (VSAT), *USA*
VSAT's mission is to support the development of efficient and clean advanced vehicle systems by helping DOTT and the automotive industry research advanced automotive technologies, analyze the potential impact of new transportation technologies, and provide a validated software tool for public use.

Department for International Development (DFID)
Energy is a sector of the Department for International Development's (DFID's) Infrastructure and Urban Development Department (IUDD - formerly Engineering) Knowledge and Research (KaR) Programme. It is supporting the provision of cleaner forms of energy to the poor in ways that do not degrade the local environment. At the same time, improving the efficiency of existing power systems enables a more reliable supply, better use of resources and lessen the need for new investment.

Dresden University of Technology, *Dresden, Germany*
Dresden University of Technology (TUD) is one of the the oldest technical universities in Germany. In the last few years it has expanded its international ties by establishing new contacts, mostly in Western Europe and in North America, as well as supported its already existing relationships with Central and Eastern Europe. In 1996, IETC conducted a pilot training program in collaboration with the University.

DTI's Planet Energy
Aimed at the education sector, learning about renewable energy technologies

DTI Sustainable Energy Programmes, *UK*
By their nature fossil fuels will inevitably run out. New & renewable energies will therefore become one of the world's main energy sources in the new millennium. Developing a thriving renewables industry in the UK therefore represents a real opportunity for UK plc. It provides a three term "win-win-win" equation: encouraging the development of new technologies; creating new jobs; and tackling global environmental challenges.

EcoCarbon, *Murdoch, Australia*
The vision of EcoCarbon is to assist Australian industry to learn collaboratively about emissions trading. It will do this through the provision of information and training tools such as EcoCarbon's current development of a Virtual Emissions Trading Program to simulate emissions trading in a computer classroom setting and, in time, on the Internet. Such collaboration can help companies understand how they can reduce the cost of carrying out GHG reduction activities, establish leadership in the field and build expertise.

Eco-Efficient Economy: RELIEF- European Research project on green purchasing
In January 2001 the biggest research project on green purchasing known in Europe has started. RELIEF, by full name "Environmental Relief Potential Of Urban Action On Avoidance And Detoxification Of Waste Streams ThroughGreen Public Procurement", is supported by the EC research programme on Environment and Sustainable Development, key action"City of Tomorrow and Cultural Heritage".

Energy and the Environment Research Programme, *UK*
The Energy and the Environment Research Programme provides: scientific and economic analysis to support and inform energy policy (encompassing issues of security and diversity of supply) and sustainable development; resources to support environmental research; and support for the maintenance and development of DTI's Energy Model.

Energy Efficiency Best Practice programme (EEBPP), *UK*
The Energy Efficiency Best Practice programme (EEBPP) is a UK Government programme designed to help organisations cut energy bills by 10 - 20%. It provides independent advice and assistance to the UK private and public sectors.

Energy Efficiency and Renewable Energy Network (EREN) - U.S. Department of Energy, *USA*
A comprehensive resource for DOE's energy efficiency and renewable energy information, plus access to more than 600 links and 80,000 documents.

ENERGY STAR, *US*
ENERGY STAR was introduced by the US Environmental Protection Agency in 1992 as a voluntary labeling program designed to identify and promote energy-efficient products, in order to reduce carbon dioxide emissions. EPA partnered with the US Department of Energy in 1996 to promote the ENERGY STAR label, with each agency taking responsibility for particular product categories.

EnR
The European Energy Network is an association of European organisations carrying responsibility in their respective countries for the planning and management of national R&D, demonstration and dissemination programmes in the field Rational Use of Energy (RUE) and Renewable Energy (RE).

Energy Technology Systems Analysis

Environment Australia, *Canberra ACT, Australia*
Environment Australia advises the Commonwealth Government on policies and programs for the protection and conservation of the environment, including both natural and cultural heritage places. It also manages a number of major programs, the most significant of which come under the umbrella of the Natural Heritage Trust. Environment Australia also administers environmental laws, including the Environment Protection and Biodiversity Conservation Act 1999 and a range of other Acts. It is also responsible for Australia's participation in a number of international environmental agreements.

Environment Canada, *Quebec, Canada*
Environment Canada's vision is to see a Canada where people make responsible decisions about the environment; and where the environment is thereby sustained for the benefit of present and future generations.

Environment Canada: Environmental Technology Advancement Directorate (ETAD) , *Quebec, Canada*
The mission of the Environmental Technology Advancement Directorate is to develop and apply science and technology for environmental protection.

Environmental Protection Agency (EPA) Environmental Technology Verification Program (ETV) , *Washington DC., US*
The Environmental Protection Agency (EPA) has instituted a new program, the Environmental Technology Verification Program - or ETV - to verify the performance of innovative technical solutions to problems that threaten human health or the environment. ETV was created to substantially accelerate the entrance of new environmental technologies into the domestic and international marketplace. ETV verifies commercial-ready, private sector technologies through 12 pilots.

Environmental Protection Agency (EPA) Pollution Prevention Projects and Programs, *US*

Environmental Protection Agency (EPA) Waste & Recycling Programs, *US*

Environmental Protection Agency (EPA) WasteWise, *US*
WasteWise is a free, voluntary, EPA program through which U.S. organizations eliminate costly municipal solid waste, benefitting their bottom line and the environment. WasteWise is a flexible program that allows partners to design their own solid waste reduction programs tailored to their needs. As a WasteWise partner, your organization can save thousands or millions of dollars by reducing, reusing, and recycling solid waste materials.

Environmental Protection Agency (EPA) Water Efficiency Program, *US*
This web site provides an overview of EPA's Water Efficiency Program which is primarily concerned with municipal water use. Efficient water use helps to reduce the need for costly water supply and wastewater treatment facilities, helps maintain stream flows and healthy aquatic habitats, and reduces the energy used to pump, heat and treat water. A broad spectrum of stakeholders, from homeowners to State governments, can find information here that can help them become more water-efficient.

ETC (Environmental Technological Capability), GTZ, *Eschborn Germany*
The pilot project "Strenghening Environmental Technological Capability in Developing Countries (ETC)" seeks to strengthen such "environmental technological capability" by exploring new ways to exchange information between, on the one hand, actors from all sectors involved (state, industry, financing institutions, research and development) in partner countries, and, on the other hand, cooperation partners from the private sector in Germany.

Environmental Technology Centre, Murdoch University, *Perth, Australia*
The Environmental Technology Centre (ETC) at Murdoch University was established in 1992, and officially inaugurated in 1994 during the National Conference on Technology Transfer in Remote Communities. The ETC was established by the Remote Area Developments Group of the Institute for Environmental Science at Murdoch. The aim of the ETC is to research, develop and demonstrate environmental technologies, conduct education and training, provide consultancy services to industry, and raise community awareness of environmental technologies.

ETSU, *Oxfordshire, UK*
ETSU is an internationally recognised centre of excellence in energy efficiency and sustainable energy technologies. These range from clean coal to solar, wind and wave power and energy derived from biomass. For 20 years ETSU has delivered an impressive range of national and international programmes to customers worldwide. These include wide ranging dissemination and promotion of target information. ETSU maintains a number of sites for the UK and European Governments and Industry.

European Commission - Environment DG, *Brussels and Luxembourg*
Within the European Commission, Directorate General Environment is responsible for Community policies for the environment, nuclear safety and civil protection. Its actions are carried out within the strategy agreed by the EU Member States, and defined in 1992 by the European Community Fifth Programme of Policy and Action in Relation to the Environment and Sustainable Development "Towards Sustainability".

European Environment Agency
The EEA aims to support sustainable development and to help achieve significant and measurable improvement in Europe's environment through the provision of timely, targeted, relevant and reliable information to policy making agents and the public.

European Institute of Environmental Energy (EIEE), *Herning, Denmark*
The European Institute of Environmental Energy (EIEE) was established in 1990 as a private, independent trade and industry foundation with the aim of disseminating knowledge and know-how on energy and environmental issues within the international energy sector. The main fields of activity are district heating and renewable energy.

FACE Foundation
Forests Absorbing Carbon dioxide Emissions

FANTASIE
The FANTASIE project is a major EU research project looking at developments in transport technologies and the effects that these will have on Europe's future transport systems. In addition, the project will look at how these technologies may influence, and be influenced by, the aims and related initiatives of the Union's Common Transport Policy.

Ford Foundation, *NY, USA*
The Ford Foundation is a resource for innovative people and institutions worldwide. Our goals are to: Strengthen democratic values; Reduce poverty and injustice; Promote international cooperation; and Advance human achievement.

GEENET - Joint UNEP Chemicals/WHO, *Geneva, Switzerland*
The Global Environmental Epidemiology Network (GEENET) was established in 1987 as part of a WHO initiative to create networks of professionals working on the health effects of environmental hazards and human exposure, pollution control technology, and environmental management and planning. Specifically, it aims to increase the national capacity of developing countries to secure environmental health by strengthening education, training and applied research in environmental epidemiology

Global Energy Network Institute (GENI), *San Diego, USA*
GENI's mission is to accelerate the attainment of optimal, sustainable energy solutions in the shortest possible time for the peace, health and prosperity of all.

Global Environment Information Centre (GEIC), *Tokyo, Japan*
GEIC focuses on providing information to the major groups identified in Agenda 21 - mostly the small civil groups and individuals. It has a commitment to better involve civil groups and people in environmental issues, and undertakes studies and activities that can better involve NGOs and other grassroots organizations in international and national environmental processes. It also undertakes activities that involve packaging information for use and consumption by non-experts.

Global Environmental Management Initiative (GEMI), *Washington, DC , USA*
An important element of the Global Environmental Management Initiative's mission of "business helping business" is to benchmark and share best practices on environmental,

health, and safety topics. GEMI's focus is on environmental achievement beyond what the law requires, and it has published several tools to help businesses realize the bottom-line value of good environmental-management techniques. Its popular annual conference features interactive workshops, round-table discussions, exhibits, meetings, and networking opportunities.

Global Network of Environment and Technology (GNET), *Virginia, United States*
The Global Network of Environment & Technology (GNET) contains information resources on environmental news, innovative environmental technologies, government environmental technology programs, contracting opportunities, market assessments, market information, current events and other material of interest to the environmental technology community. GNET uses communications and state-of-the-art technology to bring together the information, resources and people that shape the environment and technology marketplace.

Global warming information aimed at school children
UK Department for Environment, Food and Rural Affairs

GREENTIE, *UK*
GREENTIE provides worldwide access to information on suppliers of technologies, services, research, data and literature, pertinent to greenhouse gas mitigation. This is achieved through an effective global data gathering and distribution network.

IEA Multiphase Flow Agreement
To promote the exchange of information between researchers in member countries to improve the efficiency of multiphase flow systems regarding energy utilisation and emission reduction.

Impacts Centre for Southeast Asia (IC-SEA), *Bogor, Indonesia*
Its mission is to develop the capacity of the Southeast Asian region for sustainable development under global change. The Impacts Centre stimulates and supports collaborative research on impacts assessment and adaptation as well as provides support to the policy process, both at the regional and national levels in Southeast Asia, related to coping with regional and global environmental change and moving towards sustainable development.

Institute for Sustainability and Technology Policy (ISTP), *Perth Australia*
The ISTP was established in 1988 to help create a better understanding of the roles and effects of science and technology for the benefit of all sectors of society. The ISTP has grown to become Australia's leading research institute integrating policy for simultaneously creating a better economy, an improved environment and a more just, participative society.

Integrated Spatial Potential Initiative for Renewables in Europe (INSPIRE)
The INSPIRE project aimed to link renewable energy resource mapping with economic and life cycle analysis modelling (based of a Geographic Information System - GIS). The

result has been an integrated methodology for the assessment of resource availability, financial viability and environmental factors for biomass-to-energy options at both regional and national levels. Whilst this was initially conceived for biomass, it has been applied to other renewables.

InterEnvironment - World Directory of Environmental Organizations, *Sacramento, USA*
InterEnvironment works internationally to protect natural resources. The site includes online World Directory of Environmental Organizations, the standard guide since 1972.

International Center for Environmental Technology Transfer (ICETT), *Mie, Japan*
International Center for Environmental Technology Transfer ICETT,established in 1990 by Mie prefecture and Yokkaichi City with the active support of the national government, industries and academic circles, is contributing to international environmental conservation effort by transferring Japan's accumulated technological and administrative know-how and experiences to developing countries, with an emphasis on meeting specific needs in each country.

International Development Research Centre (IDRC), *Ottawa, Canada*
The International Development Research Centre is a public corporation created by the Canadian government to help communities in the developing world find solutions to social, economic, and environmental problems through research.

International Environmental Cooperation in Kitakyushu, *Kitakyushu, Japan*
The City of Kitakyushu, by overcoming environmental issues through the partnership of citizens, industry, research institutions, and local government, has accumulated a range of technologies and experience which it is using to contribute to global issues. This "international environmental cooperation" is identified as one of the most important policies in the "Kitakyushu Renaissance Master Plan" which is the fundamental action plan of our city.

International Environmental Technology Centre (IETC), *Osaka, Japan*
IETC is a UN agency. Its main role is to promote the application of Environmentally Sound Technologies (ESTs) to address urban environmental problems, such as sewage, air pollution, solid waste and noise, and the management of freshwater resources to developing countries and countries with economies in transition. The Centre serves as a proactive inter-mediator for cooperation between sources and users of ESTs.

International Initiative for Sustainable Built Environment
iiSBE is an international non-profit organization whose overall aim is to actively facilitate and promote the adoption of policies, methods and tools to accelerate the movement towards a global sustainable built environment.

International Institute for Environment and Development (IIED), *London, UK*
IIED aims to provide expertise and leadership in researching and achieving sustainable development at local, national, regional and global levels. In alliance with others we seek

to help shape a future that ends global poverty and delivers and sustains efficient and equitable management of the world's natural resources.

International Solar Energy Society (ISES), *Freiburg, Germany*
ISES is a multi-faceted, global organisation. A long history and extensive technical and scientific expertise find expression in a modern, future-oriented Society. Clearly defined goals, extensive communication networks and practical, real-world projects are the hallmarks of ISES.

International Water Management Institute (IWMI)
The International Water Management Institute is a nonprofit scientific research organization focusing on the sustainable use of water and land resources in agriculture and on the water needs of developing countries.

InterWATER
InterWATER offers contact information about organizations and networks in the water supply and sanitation sector related to developing countries. These organizations are able to provide additional information in various forms, including newsletters, reports and publications, technical expertise, products, training courses and Internet sources.

ITDG - Practical Answers to Poverty, *Rugby, UK*
ITDG is an international non-governmental organisation which specialises in helping people to use technology for Practical Answers to Poverty

Japan for Sustainability, *Kanagawa, Japan*
Japan for Sustainability is a non-profit communication platform to disseminate environmental information from Japan to the world, with the aim of helping both move onto a sustainable path.

JEMU, *UK*
The Joint Environmental Markets Unit (JEMU) is a UK Government unit with responsibility for promoting and supporting the UK environmental industry. JEMU's prime objective is to nurture the development of a strong, competitive, and world-class UK environmental industry capable of competing successfully in the world marketplace.

Joint Implementation Network

Ministry of Economy, Trade and Industry (METI) - Environmental Protection & Recycling, *Tokyo, Japan*
As its mission, METI will propel the Japanese economy by providing information and analytical insights, creating systems that support society and the economy, and enhancing Japan's technological foundations, so that companies, communities, individuals, non-profit organizations, and other players can exercise their capabilities to the fullest and maximize their potential

Ministry of Foreign Affairs (MOFA) - Environment, *Tokyo, Japan*

Ministry of the Environment, *Singapore*
ENV's mission is for Singaporeans to have a clean living environment and to enjoy a high standard of environmental public health protected against spread of communicable diseases.

Ministry of the Environment, *Tokyo Japan*
We must change our society to a sustainable one that generates little burden on the environment, while at the same time promoting international activities for conserving the global environment.

Ministry of Science, Technology and Environment (MOSTE), *Thailand*
The Ministry of Science, Technology and Environment is the agency in charge of formulationg the national policy on science, technology and the environment. Its 16 agencies work to implement these policies efficiently and in coordination to bring about the most socio-ecomomic benefits and national stability.

Murdoch University, *Perth, Australia*
The Murdoch Univesity, established in 1975, aims to extend knowledge, stimulate learning, and promote understanding, for the benefit of the community.

National Institute for Environmental Studies (NIES), *Ibaraki, Japan*
The National Institute for Environmental Studies (NIES) was established in 1974 at Tsukuba Science City, about 60 km northeast of Tokyo, as the main research branch of the Environment Agency (EA) of the Government of Japan. NIES is the sole national institute for comprehensive research in the environmental sciences.

National Renewable Energy Laboratory (NREL), *U.S.A*.
As the nation's leading center for renewable energy research, NREL is developing new energy technologies to benefit both the environment and the economy.

New Energy and Industrial Technology Development Organization (NEDO), *Tokyo Japan*
The New Energy and Industrial Technology Development Organization (NEDO) was established as a semi-governmental organization in October 1980, just after the second oil crisis, by bringing together financial and human resources and technology expertise from the government and private sectors.

New Ideas in Pollution Regulation (NIPR), *World Bank, USA*
NIPR is the primary source for materials produced by the World Bank's Economics of Industrial Pollution Control Research Project, intended to communicate new research findings and program ideas among researchers, government officials, and citizens interested in understanding and improving control of industrial pollution, especially in developing countries.

OECD Environment, *Paris, France*
Organisation for Economic Co-operation and Development [Environment]

OECD Environment, Increasing Resource Efficiency - Sustainable Construction, *Paris, France*
The environmental and economic performance of the construction sector can be enhanced through the efficient use of materials and energy resources, and by considering its influences on the ecological and social surroundings.

ORBIT Association
The ORBIT Association is a non-profit international organisation dedicated to promoting the scientific and technological development of environmental biotechnology.

Pacific Institute - Water Fact Sheet, *USA*
The Pacific Institute for Studies in Development, Environment, and Security is an independent, non-profit center created in 1987 to conduct research and policy analysis in the areas of environment, sustainable development, and international security.

Pacific Power, *Australia*

Planet Ark, *Australia*
Planet Ark's aim is to show people and business the many ways that they can reduce their day to day impact on the environment.

Planet Energy
Planet Energy provides information on renewable energy especially aimed at school children, university students and teachers.

The Pollution Prevention World Information Network (P2WIN), *Ontario, Canada*
P2WIN is an Internet-based network which connects and serves as a virtual meeting place for pollution prevention roundtables, cleaner production networks and other organizations committed to advancing cleaner production and sustainability issues.

Pollution Probe, *Ontario Canada*
Pollution Probe is a Canadian environmental organization that defines environmental problems through research, promotes understanding through education and presses for practical solutions through advocacy.

PRe Consultants, *Netherlands*
PRe Consultants' mission is to develop and implement practical, yet scientifically sound tools to improve the environmental performance of products or services through Life Cycle Management. Among these tools are SimaPro, the most widely used Life Cycle Assessment tool, ECO-it ecodesign software and state-of-the-art Eco-indicator impact assessment methodology.

RECONNECT
The main objective of the proposed research study RECONNECT is to answer the key questions: How can new concepts of transport contribute to reducing congestion and to

enhancing sustainable mobility? How can they play a regional role or solve problems at a larger scale through integration with other modes ?

Regional Institute of Environmental Technology (RIET)
Riet's mission is too enhance environmental management and technology awareness, understanding and capability in Asia and to promote international environmental business partnerships and environmentally compatible flow of trade and investment with Asia

Renewable Energy Database Initiative
The aim of this project is to develop, disseminate and put in action a digital information sector strategy for renewable energy.

REPP-CREST, *USA*
REPP-CREST's goal is to accelerate the use of renewable energy by providing credible information, insightful analysis, and innovative strategies amid changing energy markets and mounting environmental needs. The combined REPP-CREST organization boasts a strong platform for research, publication, and dissemination of timely information regarding sustainable energy.

RESIDUA - Warmer Bulletin & RRF website, *North Yorkshire, UK*
Warmer Bulletin, the premier international bi-monthly journal on sustainable waste management and resource recovery. The Resource Recovery Forum is a network of more than 60 organisations with a shared interest in seeing society achieve more sustainable waste management - making better use of waste that is produced.

RESTATS, *U.K.*
RESTATS holds information on known projects for all renewable energy technologies in the UK that have produced energy at any time since 1989. These include active solar, photovoltaics, wind, hydro, wave, biofuels (biomass and biowastes) and geothermal technologies.

Risø National Laboratory

SciDev.Net, *London, U.K.*
SciDev.Net is a free-access, Internet-based network devoted to reporting on and discussing those aspects of modern science and technology that are relevant to sustainable development and the social and economic needs of developing countries.

SectorSTAR, *USA*
SectorSTAR is a network for the Center for Industry Sector Innovation. It features tools and resources, access to federal, state and local programs, and a library of success stories showcasing innovations from companies in key industries.

SIWI, *Stockholm, Sweden*
The Stockholm International Water Institute (SIWI) is a scientific, technical and awareness-building organization that contributes to international efforts to combat the

escalating global water crisis. SIWI facilitates research, increases understanding and stimulates action on world water issues.

SMART-Cities.net
CITYNET, the Regional Network of Local Authorities for the Management of Human Settlements, Green City Denmark and the Regional Institute of Environmental Technology (RIET) have teamed up to set up an online portal that aims to enhance interaction between Asian-Pacific cities and European companies.

Source for Renewable Energy
The Source for Renewable Energy is a comprehensive buyers guide and business directory to more than 5000 renewable energy businesses and organizations around the world.

Southern African Renewable Energy Information Network (SAREIN)
This project aims to accelerate the uptake of RE in Southern Africa by transferring relevant experience for European Union (EU) countries through the operation of the Southern African Renewable Energy Information Network (SAREIN).

SUSTRAN Network
The SUSTRAN network promotes and popularises people-centred, equitable and sustainable transport with a focus on Asia and the Pacific.

Tata Energy and Resources Institute (TERI), *New Delhi, India*
A dynamic and flexible organization with a global vision and a local focus, TERI was established in 1974. Today, TERI is poised for future growth, driven by a global vision and outreach, with a philosophy that emphasizes and assigns primacy to enterprise in government, industry, and individual actions.

Technology Partnership Initiative (TPI), *London, UK*
Partnership often provides solutions, and enabling successful international partnership is what the UK Technology Partnership Initiative (TPI) is all about. A government initiative, we aim to link companies and organisations in industrialising and developing countries with UK companies and other organisations which provide both technologies and services, as well as the information and advice they need to deal with their environmental problems.

Thailand Environment Institute (TEI), *Bangkok, Thailand*
Founded on the belief that partnerships are the most effective approach to achieving a more sustainable way of life, the Thailand Environment Institute (TEI) advocates a participatory approach to shared environmental responsibility. Only through harnessing our collective strengths can we hope to achieve a better life for all.

The IEA Energy Technology Data Exchange

Tiempo
The Tiempo Climate Cyberlibrary is an electronic information service covering global warming, climate change, sea-level rise and related issues.

UNEP
United Nations Environmental Programme

UNEP Collaborating Centre on Energy and Environment

UNEP Division of Technology, Industry, and Economics (UNEP TIE), *Paris, France*
UNEP TIE was created in 1998 to help decision-makers in government, local authorities, and industry develop and adopt policies and practices that are cleaner and safer; make efficient use of natural resources; ensure adequate management of chemicals; incorporate environmental costs; and reduce pollution and risks for humans and the environment.

UNFCCC
United Nations Framework Convention on Climate Change

UNIDO - Climate Change
United Nations Industrial Development Organisation

United Nations University/International Network on Water, Environment and Health (UNU/INWEH), *Ontario, Canada*
The International Network on Water, Environment and Health is a new member of the U.N. University family of organizations. It was created by the U.N. University Governing Council in 1996 with core funding provided by the Government of Canada. Its purpose is to strengthen water management capacity, particularly of developing countries, and to provide on-the-ground project support.

U.S. Clean Technology Exchange, *USA*
Clean Tech Exchange is an initiative of the U.S. AID's EcoLinks program in partnership with GETF. The Exchange promotes innovative environmental technology partnerships between the United States and Central and Eastern Europe and Eurasia.

US National Energy Technology Laboratory

Water and Sanitation Program, *Washington, D.C, USA*
The WSP is an international partnership of the world's leading development agencies concerned with water and sanitation services for the poor. Its mission is to alleviate poverty by helping the poor gain sustained access to improved water and sanitation services.

Water Research Commission (WRC), *South Africa*
To contribute effectively to the best possible quality of life for the people of South Africa, by promoting water research and the application of research findings.

Water Supply and Sanitation Collaborative Council, *Geneva, Switzerland*
The Water Supply and Sanitation Collaborative Council is a leading international organization that enhances collaboration in the water supply and sanitation sector, specifically in order to attain universal coverage of water and sanitation services for poor people around the world.

World Renewable Energy Network (WREN), *Reading, UK*
Established in 1992 during the second World Renewable Energy Congress in Reading, UK, WREN is one of the most effective organizations in supporting and enhancing the utilisation and implementation of renewable energy sources that are both environmentally safe and economically sustainable.

Worldwatch Institute, *Washington, D.C. USA*
The Worldwatch Institute is dedicated to fostering the evolution of an environmentally sustainable society--one in which human needs are met in ways that do not threaten the health of the natural environment or the prospects of future generations. The Institute seeks to achieve this goal through the conduct of inter-disciplinary non-partisan research on emerging global environmental issues, the results of which are widely disseminated throughout the world.

World-wide Information System for Renewable Energy (WIRE)