

International Climate Change and Vulnerability Conference



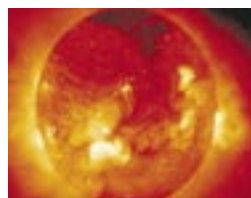
12-14 February
2007

Peace Palace,
The Hague,
The Netherlands

Organized by the University for Peace
www.upeace.org

Final Report

Global Challenge
Global Climate Solidarity



University for Peace



Final Report

Climate Change and Vulnerability Conference

The Hague, The Netherlands

12-14 February 2007

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10 March 2007

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The University for Peace wishes to express sincere appreciation to the following partners for generous contributions to the Climate Change and Vulnerability Conference:

Alliance for the University for Peace



Alliance for UPEACE

Common Wealth Secretariat



Dutch Ministry of Foreign Affairs



Fred Foundation



HIER



Municipality of The Hague



National Postcode Lottery



Netherlands Ministry of Housing, Spatial Planning and the Environment



Provincial Government of Zeeland



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1 EXECUTIVE SUMMARY

This report summarizes the proceedings of the Climate Change and Vulnerability Conference, which took place 13-14 February 2007 in the Peace Palace of The Hague. Participants included distinguished policy makers, technical experts, scholars, and community leaders from over 30 countries. The University for Peace (UPEACE) organized the Conference. UPEACE was established by the United Nations to address the causes and consequences of conflict, promote cooperation, and lessen threats to world peace, security and development.

Climate warming presents complex security risks in every region of the world. The Intergovernmental Panel on Climate Change 4th Assessment Report, released 2 February 2007, concludes that it is 90% certain that human-generated greenhouse gases are heating the planet at a dangerous rate. The IPCC evidence for climate warming is “unequivocal”. Hazards include rising sea levels, flooding, coastal erosion, salinization of fresh water resources, loss of biodiversity, drought, and extreme weather events. Small Island and low-lying coastal nations are among the most vulnerable, particularly those coping with poverty.

The Netherlands, a low-lying country where flood defense and precautionary measures are the highest in the world, was a fitting host country for this international Conference. This venue offered a preeminent opportunity to exchange experiences and learn from Dutch advocacy, decision-making processes, adaptation measures, and incentives for private sector stewardship. The Conference was unique in engaging island and coastal leaders to discuss geographic and social realities, current initiatives, equity concerns, and suggestions for cooperation.

The goals of the conference were threefold: First, to increase understandings of the risks of climate change and options for adaptation; second, to design university curricula that build climate leadership and foster local adaptation; and third to develop partnerships among education, research and training institutions. The programme was designed to address these goals through a continuum of diverse learning activities. Dutch hospitality set the stage for the open and engaging deliberations that began during the field trip preceding the conference and took place throughout the event.

Goal One: Increasing Understandings

The conference was opened by **Mr. Pieter van Geel**, Dutch State Secretary for Housing, Spatial Planning and the Environment, and addressed by **Mr. Jan Pronk**, former Dutch Minister for Development Cooperation and Minister for the Environment. Other keynote speakers were **H.E. Enele Sosene Sopoaga**, UN Ambassador of Tuvalu, and **Professor Pier Vellinga**, Director of the Climate Centre of the Free University Amsterdam.

Early in the programme, participants investigated scientific concerns,

compared strategies, and began to share technical experiences. We learned that climate warming is unavoidable, and both mitigation and adaptation are required. The need for adaptation is urgent, as among the first victims are island and low-lying coastal states. The poor, though not responsible, are the most vulnerable and least able to adapt.

Mr. Jan Pronk challenged the participants to cooperate internationally and to be consistent, and equitable, in their commitments. He valued progress made through multilateral agreements, including the Kyoto Protocol, yet expressed frustration with the lack of concrete and creative action.

Ambassador Enele Sopoaga of Tuvalu warned that there is an urgent need for adaptation. “Small Islanders are potential environmental refugees,” he stated. “What we need now is the implementation of concrete projects on the ground. Unless adaptation measures are implemented, sustainable development is severely compromised.”

From The Netherlands we learned of the HIER Campaign to address climate issues and “Nature’s Calendar”, an Internet-based model for expanding levels of public engagement. From the Pacific Islands, we learned of the adaptation strategies of Pacific regional institutions, universities and NGOs.

Small group discussions brought together educational, research and training institutions and set the stage for new partnerships. Topics included how to mainstream adaptation in coastal and disaster management, water and health, and cities for the future. We learned that all projects require longer-term commitments and the dissemination of case studies and effective practices. For that, we considered the role and potential contributions of higher education.

Goal Two: Engaging Higher Education

What are the potential partnership and capacity building roles of higher education institutions? We discussed resources and experiences with participants from the University Consortium of Small Island States (UCSIS), Ibaraki University, the University for Peace (UPEACE), the University of the South Pacific, Zeeland University, Wageningen University, and the UNESCO-IHE Cooperative Programme on Water and Climate. Recommendations included:

- Offer flexible graduate study options for professionals.
- Ground curricula in local realities.
- Build leadership with “curricula as thinking”.
- Infuse climate change and adaptation across different subject areas disciplines (easiest approach).
- Integrate climate through interdisciplinary design of courses across departments (more challenging).
- Prepare professors to foster leadership and innovation through experiential learning.
- Increase access to climate-related courses and activities through university partnerships and networks.

1 EXECUTIVE SUMMARY

Universities are viewed as “knowledge hubs” with influence at policy and community levels. As technical experts and professional mentors, they are strategically positioned to facilitate communication and cooperation among policy makers and community leaders.

Goal Three: Developing Partnerships

Various universities are addressing climate issues, and they tend to specialize in particular disciplines or sectors. To implement comprehensive climate adaptation measures, there is an urgent need for access to analytic tools, case studies, appropriate technologies, and faculty. In developing nations, the lack of resources is a major barrier, and these nations request that curricula and tools be made available online.

How to strengthen university partnerships for climate leadership and adaptation?

- Improve applied research, documentation, and the dissemination of case studies.
- Cooperate to develop funding for university scholarships.
- Develop community outreach projects with small-scale funding.
- Facilitate the exchange of visiting professors.
- Co-develop experiential education and teacher training resources.
- Develop Centers of Excellence that conduct research, inform the public and advise policy.

To expand private sector partnerships, we asked for corporate perspectives. We learned that the private sector is willing to fund local capacity building projects if they are conceived as part of the corporate “good neighbor” strategy. Thus, corporations may be willing to fund scholarships for students from vulnerable small-island or low-lying coastal states where they do business. Economic incentives help to stimulate private sector engagement in climate issues. Most corporations are willing to invest in energy efficiency, and banks seek to invest in companies that create solutions.

Various meetings were held to explore future partnerships among education, training and research institutes. For example, the University for Peace met with the University Consortium for Small Island States (UCSIS) and the Commonwealth Secretariat to discuss institutional cooperation with a common vision of building capacities for climate leadership and adaptation. Potential activities include joint research projects, small community implementation grants, leveraging of support for scholarships, and allowing postgraduate students to enroll in member or associate partner institutions for specialized coursework.



In the following pages, this Final Report offers more detailed summaries for each of the sessions. The Chairman's Conclusions by Professor Dr. Bastiaan C.J. Zoeteman also provide a formal analysis of the Conference proceedings. For original plenary and keynote speeches, powerpoint presentation slides, and photos, see www.upeace.org/climate or www.allianceforupeace.nl or, in the near future, the website www.myucsis.com.

2 FIELD TRIP: ADAPTATION PROJECTS IN THE NETHERLANDS

On Monday, 12 February 2007, the international participants were invited to visit adaptation projects in the Province of Zeeland in The Netherlands. With Dutch technical experts, they discussed the risks of climate change, technical innovations, lessons learned, and public and private sector plans for the future. The field trip was organized with the help of Mr. Henk van Schaik, Coordinator of the Cooperative Programme on Water and Climate. Our guide was Mr. Tjeerd Blauw, senior adviser water management of the Province of Zeeland.

The Dutch welcomed the international participants and spoke candidly about the evolution of adaptation measures in Holland. Innovations include creating offshore barrier islands and natural coastal barriers. The Dutch explained that in the past, major infrastructure projects “waged war” against the waters of the North Sea. Now, there is a trend toward adaptation that “lives with and moves with” the water.

Highlights included a tour of the Delta Park on the island of Neeltje Jans, with presentations on the Deltaworks, aquaculture, integrated coastal zone management, and the Oosterschelde storm surge barrier. We visited Yerseke and the mussel hatchery and nursery of the company “Roem van Yerseke” for examples of innovation in the field of aquaculture.

In the evening, we enjoyed a reception hosted by Ir. W.W. van Zandbrink, member of the Provincial Executive, at the Abbey of Middelburg.



Professor Dr. Bastiaan Zoeteman, Chairman of the Alliance for the University for Peace, served as the Chair for the morning sessions. As he opened the conference, Professor Zoeteman welcomed the participants from over 35 countries, reviewed the goals of the conference, and proposed that the 21st century be the century dedicated to environmental security. Professor Zoeteman highlighted the importance of international cooperation, noting the conference slogan: "Global Challenge, Global Climate Solidarity HIER".

3.1 Welcome and Orientation

In our welcome to Dutch and international participants, we explained the goals of the conference and how it was organized to encourage leadership and active participation.

Speakers:

Mr. Pieter van Geel, Dutch State Secretary for Housing, Spatial Planning and the Environment

Mr. Georges Tsai, Acting Rector, University for Peace



Mr. Pieter van Geel welcomed the international participants to The Netherlands. He began by recognizing the shared risks of climate change to the lowland coastal nations and the small island states. Referring to the IPCC report, he noted that it is "very probable" that humans are causing climate change, with impacts that we are all experiencing now, including extreme weather events, sea level rise, temperature rise, ice caps melting, and changes in precipitation patterns. By the end of this century, the 2007 IPCC projects temperature increases of 1.8-4.0 degrees Celsius with sea level rise between 18-58 cm.

"How to manage the unavoidable?" Mr. van Geel asked. We are making very slow progress through international policy agreements. "Regionally, the EU has taken a leadership role by proposing a 30% reduction in greenhouse gas emissions by 2020."

As a vulnerable low-lying country, The Netherlands acts in accordance with the precautionary principle: uncertainties about climate change do not forestall action. The nation is reducing CO₂ emissions and continuously strengthening its coastlines. The Climate

Adaptation Program launched in early 2006 achieves climate resistance through an integrated approach. Urban planning is required, including more green spaces. The Netherlands seeks to implement clean development mechanisms and to cooperate in support of adaptation in developing countries. It is essential to avoid the unmanageable, Mr. van Geel stated: "This problem is overwhelming without global solidarity and cooperation."



Mr. Georges Tsai, Acting Rector of the University for Peace, welcomed the participants and noted that 35 countries were represented. He thanked the sponsors and organizers on behalf of the University. In particular, he recognized the HIER Climate Bureau, the Dutch Ministries of Foreign Affairs and of VROM, National Postcode Lottery, Municipality of The Hague, Fred Foundation, Alliance for UPEACE, UNESCO's Cooperative Programme on Water and Climate, and the Province of Zeeland for their hospitality during the field trip.

The University for Peace was established to promote understanding, tolerance, and peaceful coexistence. It is the only institution authorized by the United Nations to grant Master's and Doctoral degrees in peace and conflict studies. Priorities include research and face-to-face teaching; dissemination of curricula through various media; and extension activities through partnerships with other universities. Mr. Tsai thanked the organizers and recognized the University alumni at the conference: Ms. Catherine Garcia, Ms. Elizabeth Hogan, Ms. Alana Paul, Mr. Dominic Stucker, and Mr. Douglas Williamson.

3.2 Opening Plenary: Mr. Jan Pronk

Speaker: **Mr. Jan Pronk**, former Minister of Development Cooperation and of Housing, Spatial Planning and the Environment (cabinets of Lubbers and Kok) and former Special Representative of the United Nations Secretary General in Sudan

Mr. Jan Pronk recognized the challenges of addressing climate change through policymaking. Seven years ago, he had the honor of presiding over the 6th Conference of Parties in the Peace Palace of The Hague. At that time, he asked the Dutch national poet, Gerrit Komrij, to write about the state of the earth at the turn of the millennium. "The Straw that Breaks the Camel's Back...?" is a poem about the limits on what the earth can carry. It illustrates that the problem is



not just last straw – everyone is responsible for the added pressure of each straw. Mr. Pronk described the 6th Conference of the Parties as a failure, with circular discussions that went nowhere. Perhaps Gerrit Komrij had foreseen this, as another of his poems was entitled “In Vain”. Many questions remain, and now conference fatigue is creeping in. No more discussions!

It is almost impossible to deny that climate change is human-induced. The 4th report of the Intergovernmental Panel on Climate Change, just released 2 February 2007, states that human-induced climate warming is “very likely” – with 90% certainty. Threats include desertification, intensity of cyclones, drought, arctic ice melt, wind speed, and sea level rise that will continue for centuries.

In 1992, member states at the Rio conference agreed to deal with climate change based upon the precautionary principle. Promises have been made, and this was wise and forward looking indeed, even with scientific uncertainty. Principles of equity recognize common but differentiated responsibilities. Developed countries promised not to use science to stifle the development of poorer ones. Instead they promised to offer assistance. The Framework Convention on Climate Change was just and fair. The burdens of mitigation would fall first on developed countries, as these were the ones that had placed most of the straws on the camel’s back.

In 1997, the Kyoto Protocol emerged as a binding international law document. The negotiation of qualitative agreements are easier than negotiations of quantitative implementation instruments and definitions, including questions of carbon trading that preserve lifestyles in developed countries. Conference fatigue set in, as the negotiations failed again and again. Public pressure kept the discussions going. “Talking helps if the talks are supported as well as challenged from outside”, Mr. Pronk observed.

Looking forward, Mr. Pronk offered the following advice to negotiators:

- 1 Stay faithful to agreements.
- 2 Don’t start all over again.
- 3 Go forward, and refrain from riddles; move obstacles.
- 4 Stay together.

- 5 If for some reason a country feels it is not in a position to agree, don’t let it hold back the others.
- 6 If a country cannot agree, it should not use power play or blackmail to hold others back.
- 7 Consider others’ interest, and don’t antagonize.
- 8 Remain open for all to join in the future.

Mr. Pronk believes that much of the criticism of the Kyoto Protocol is unwarranted. The Protocol is flexible and applicable worldwide. It is not limited just to regulations but is market oriented and can lead to technological innovation. It contains binding obligations and sanctions on noncompliance. It is fair to both developed and developing countries. It is based on sustainability. So it is good, but is it good enough? No, it is only a first step. It requires more mitigation efforts, but it does not require something totally new. The problem now is lack of implementation – a lack of political will to build upon it.

Mr. Pronk recalled that when President George W. Bush proclaimed that Kyoto was “dead”, the other members of the Climate Treaty were insulted – and motivated to act. They determined never to let themselves fail again. The shared frustration served as a motivator for greater cooperation, as it was not acceptable for Bush to unilaterally declare a common endeavor “dead”.

Mr. Pronk’s advice to civil society: Don’t be too pessimistic. In negotiations, the five “Ds” are *Denial*, *Doubt*, *Disinformation*, *Delay*, and *Despair*. Mutual “*Distrust*” is a new addition. And the 7th is now “*Doom*”. Not in reality, but in preaching of doom.

Count your blessings:

- 1 The IPCC is a common endeavor engaging scientists from around the world.
- 2 There is more public awareness because of weather events, such as Katrina, tsunamis, and less snow in the Alps. In reality, climate is getting a higher place on political agendas.
- 3 The mood has changed, and it is fashionable to think about sustainability. It will spread from Europe, and the US is bound to take a lead soon. This presents an opportunity. Don’t lose. Don’t just for politics – act! Form your own political alliances. Specifically:
 - Address the 7 Ds (above) by the 7 Cs: *Consistency*; *Conscientiousness*; *Consciousness of the needs of the poor*; *Cooperation*; *Concrete action*; *Commitment to the earth and people*; *Creativity*.
 - Do not let politicians off the hook. Make them think about the future.
 - Show that civil society can do more than just lobbying.
 - Press for multilateral approaches, with international cooperation among regions, business and NGOs.
 - Act now. Don’t wait for a new agreement.
 - Don’t be dogmatic. Be flexible.
 - Don’t get desperate. Don’t get paranoid. Never give up.

Today’s slogan: “Change starts HIER.”

3.3 Pacific Island and Dutch Keynote Speakers

Next, we analyzed shared and specific regional and socio-economic issues. From the Pacific Islands, we learned of vulnerabilities, coalition building and capacities to adapt. From The Netherlands, we learned of Dutch strategies for promoting multilateral cooperation, including both successes and challenges. After the presentations, the speakers engaged with the audience.

Moderator: Ms. Madeleen Helmer, International Federation of the Red Cross and Red Crescent Societies

Speakers:

H.E. Enele Sosene Sopoaga, Tuvaluan Ambassador to the United Nations and Vice Chair of the Alliance of Small Island States

Professor Pier Vellinga, Director of the Climate Centre of the Free University at Amsterdam and former Chair of the Scientific and Technical Advisory Panel of the Global Environment Facility



Ms. Madeleen Helmer began by asking: “How important is it for small island states to have a mission in the United Nations?” Ambassador Sopoaga’s response: “It is very important, especially for climate issues.”

H.E. Ambassador Sopoaga described the wide consensus on the vulnerability of small islands states, which have similar features. Many are very narrow, such as low-lying atolls. None of the communities are far from the sea. This vulnerability is well recognized in UN agreements, such as Agenda 21, UNFCCC, and the Mauritius Declaration. Predictions include sea level rise, coral bleaching, and severe weather events, such as cyclones, hurricanes and typhoons.

The simple message from IPCC is that these things will happen if we fail to act now, and the consequences will be catastrophic and will lead to people being totally displaced. Clearly there is an urgent need for adaptation. This is an issue the Alliance of Small Island States (AOSIS) has been pushing since the 1992 Rio Conference.

Climate issues are causing great anxiety. Small islanders are potential environmental refugees. The 2007 IPCC report indicates that melting of the Greenland ice cap would cause sea level to rise by

seven meters. Upon learning this, Ambassador Sopoaga considered telling the people of Tuvalu to pack their bags.

“We don’t want the people of Tuvalu to become environmental refugees,” the Ambassador stated, “What we need now is the implementation of concrete projects on the ground.” Unless adaptation measures are implemented, sustainable development is severely compromised. Adaptation involves two principle components:

- 1 *Fostering resilience*. This implies adequate funding, proper technologies, and education for adaptation. These priorities are laid out in the Mauritius Strategy for Implementation. The funding is far from adequate to do anything. There is a need to be more innovative and look for other sources for funding. Technology is there but we need to look at appropriate technologies for the islands.
- 2 *Restoring property*. There is an urgent need for some type of insurance for vulnerable nations like Tuvalu. The Annex I countries should be the ones providing the funding. This is their moral responsibility because they have been the ones contributing to the emissions.

The biggest asset for small islands states is public awareness. This is being generated by the new IPCC report. We need to work regionally, and with like-minded partners. In Nairobi the “F-word” was future action. So while we could talk about the threats, there was no talk about actions, such as those laid out in Kyoto. It is time that countries, both developed and developing, start making contributions.

Ms. Helmer noted that these issues are not new, they have been raised time and time again, and asked, “Has the D of *Despair arisen*?” Ambassador Sopoaga agreed that the challenges have been well identified. “What we need now is to implement,” he stated. One major barrier to action is procedural, and that is never ending. “We have to write reports and reports on reports. If this money had been disbursed to our countries this would be more practical and useful. We would already be building sea walls and solving water problems.” What we need is real implementation. The obligation is clearly expressed in the Convention. We are trying to help the most vulnerable parties that are mentioned in the Convention. Still Annex I countries need to make an adequate contribution of proper funding and technology transfer. Accessing GEF and other climate change funds is difficult. There is a need for partnerships to devise and support adaptation initiatives, including “Centers of Excellence”.

Ms. Helmer then asked Dr. Vellinga about the past 20 years of climate change action. **Dr. Vellinga** responded that the climate issue was once inconvenient for industry, but now business is acting to reduce emissions. Extreme events have caught the public attention, as mentioned by Mr. Pronk. Industry needs something dramatic to wake up, like images of dead fish floating in the Rhine. Government influence is not enough.

Dr. Pier Vellinga stated that sea level rise would continue for centuries, even if green house gas emissions could be stabilized. Temperatures warming in excess of 1.9 to 4.6 degrees Celsius would melt ice sheets and cause 7 meters of sea level rise. Climate change models predict that the north will warm first, and Greenland is melting even faster than the IPCC report indicates. More science is needed, but for now we should take the IPCC as the best study in town.

The Netherlands provides an example that you can actually live six meters below sea level. In the future, the estimated annual cost of protecting The Netherlands is 500 to 1,000 million Euros a year. This is 0.1 - 0.2% of GDP, which is affordable; the Dutch won't have to move to neighboring countries.

Dutch adaptation strategies include making new islands in the North Sea, building secondary dykes, establishing nature reserves as climate and flooding buffers, creating new rivers to handle discharge, and dumping sand off shore. We see floating cities and greenhouses, modern urban mounds, saline and brackish cultivation, and raising quays to save Rotterdam as a port with a sea-level rise of even three meters.

Noting the serious gaps between a rich country like The Netherlands and the small island states, Ms. Helmer asked, "What about this discrepancy?" Dr. Vellinga clarified that the Dutch adaptation funds noted earlier are projected for the future. Presently, the Dutch spend around 20 million to 30 million Euros a year on adaptation, and this percentage of GDP is not too much.

What the Dutch need to foster is knowledge sharing and cooperation amongst states. There is a need for planning, no-regret measures, and partnerships from the private sector. "We cannot wait until governments agree. There is a need to share experiences between the Dutch and island states." It is already happening, as outlined in the Mauritius Initiative. Centers of Excellence are a good idea for facilitating research and exchange, and these need support.

"Is sharing a priority for The Netherlands?" asked Ms. Helmer. Dr. Vellinga responded: "Honestly, no." There is more priority given to self-protection and less on international sharing. He added that he hopes this will change in the future. Ms. Helmer then asked about the EU. Dr. Vellinga observed that the EU has been slow to address adaptation. Until very recently, the issues were vague, but the new IPCC report is changing priorities.

To conclude, Ms. Helmer invited both speakers to state their hopes for this conference. Ambassador Sopoaga began: "The message is simple. There is urgency for action, and for that it is extremely imperative for all stakeholders to cooperate more closely. Public opinion is very important and this conference has a role to promote that cooperation; not only between states but also between civil societies. I hope this conference will act to strengthen that cooperation."

Dr. Vellinga seconded the Ambassador, and he added that too much focus is given to terrorism. He agrees with Al Gore that climate change is a security issue of a similar magnitude, with differences in time and scale. For example, computer modeling shows that in the future New York City may be submerged under water. In closing, Dr. Vellinga expressed his hope that the conference will more clearly link climate change to peace and development issues, especially for policy makers.

3.4 Adaptation in The Netherlands

How to foster the implementation of adaptation measures? Next, we demonstrated ways to engage the public and the government. In this session, Dutch realities and cultures were represented.

Presenters:

Mr. Sible Schöne, Climate Bureau

Arnold van Vliet, Wageningen University

Mr. Sible Schöne began by introducing HIER as both a programme and a campaign. When HIER started in 2005, climate change was a low-ranking issue and an abstract problem. There were many initiatives to address climate change in Holland, but they involved individual actions, and they were invisible, not part of something bigger. People asked: "Why should I do something? What's the relevance of my individual contribution?"

HIER was established to convince society that climate change is "here and now". When people are confronted with death or disease, people start to understand that the issue is real, instead of simply an abstract issue. The aim is to make the actions of individuals part of something bigger. The Dutch National Postcode Lottery provided an opportunity for NGOs to make this issue a priority on the political agenda.

Over 40 organizations are involved in HIER mitigation and adaptation projects. Organizations look at climate change as a way to improve the quality of their own work. Some organizations such as UNICEF aren't directly focusing on the science of climate change so much as they are committed to protecting children from suffering or dying from floods and extreme weather events. This is how they have become new centers of the message that climate change is an important issue.

HIER now supports a consumer campaign to get millions of people involved, and the business sector has been invited to participate. The HIER logo is used with efficient light bulbs, and with a list of the top ten most efficient products (e.g., refrigerators). The HIER campaign involves billboards, TV ads, photo competitions, school visits with a Dutch pop star, climate action on the map via Google Earth, and daily weather programs in which people ask questions about climate change from a Royal Dutch Meteorological partner. Al Gore came to The Netherlands for a showing of "An Inconvenient Truth".

In The Netherlands, children enjoy planting trees, and we are using Nature's Calendar (described below) as a tool to raise awareness on climate change.

HIER is experiencing success as a national campaign, and Mr. Schöne sees the need to rethink targets and become more ambitious. Joint policy proposals include advocating for a 30% emission reduction by 2020; increasing support for natural climate buffers in The Netherlands; and requesting funds for adaptation in developing countries. "Would it be possible for 1 million Dutch people to become climate neutral, buying climate neutral gas or compensating for their flights?" HIER is working with NGOs and other organizations to reach this ambitious goal. In fact, this Conference is climate neutral. All flights have been compensated by contributing funds for forestation projects.

The HIER campaign is about making the people excited about the issue of climate change. This is the way to change the way people behave, using the communications tools to bring the issue of climate change to the public agenda. The HIER campaign gives the issue a dynamic, a sense of urgency, which attracts younger people to be more committed. During the last decade, a number of educational tools have been developed on climate change, and they are improving. "Nature's Calendar" provides an example of the ways to broaden the scope, teaching people to integrate these issues into their lives and studies.

Mr. Arnold van Vliet described "Nature's Calendar". This Internet programme can be used to educate the public about the timing of life cycle events (phenology) and the ecological impacts of climate change. Many sectors depend on this information: agriculture, health, fisheries, forestry, architecture, landscaping, and tourism. Over 6,000 Dutch observers, including children, are documenting changes in nature, such as the early flowering of plants or the migration patterns of species of butterflies. See the Dutch website www.natuurkalender.nl or the English version at www.bbc.co.uk/naturescalendar.

"Nature's Calendar" can be used for global research and communication. People's observations contribute to the analysis of changes occurring in all regions of the earth. The technologies are available to anyone. By increasing knowledge of nature and climate, "Nature's Calendar" increases public support of climate-related policy. Cooperation and partnerships are forming, and climate change issues are now more visible and real.

Following Mr. Van Vliet's presentation, the audience asked Mr. Schöne and Mr. Van Vliet questions about the HIER Campaign, "Nature's Calendar" and other strategies. In their responses, major points included:

- It is best if NGOs and society are the owners of the HIER campaign, and if the government provides support to this idea. We want you to use it. Of course countries can do it in their own way, as long as they use it immediately. When we start a campaign like this, we want to make it as internationally relevant as possible.
- Public opinion is a very important tool. Use of the media, Internet and other sources of communication are extremely important.
- We invest in the big international NGOs so that when they start to learn and talk about climate change, they'll do so in their home bases or in countries like the U.S. or Australia as well.
- Adaptation is not an alternative to mitigation. Push for policy change in the United States, Australia, and China; they are stalling the progress for nations that are really committed to reductions in CO₂ emissions.

Dr. Mary Jo Larson served as the Chair for the afternoon of 13 February. She encouraged the participants to engage proactively in the group sessions and then introduced the Pacific islanders, noting that they had traveled vast distances. Mr. Riibeta Abeta was thanked for stepping forward at the last minute to replace Mr. Roz Terubeca, a Kiribati radio announcer scheduled to lead the session but coping with remote island transport.¹



¹ Mr. Roz Terubeca was scheduled as a Lead for "Adaptation in the Pacific". His flight from a remote island atoll in Kiribati was cancelled when he tried to depart after a family funeral. He finally managed to return to Tarawa (main island) by ship, but did not arrive in time for the 2x weekly international flights from Kiribati to Fiji.

3.5 Adaptation in the Pacific Islands

With audience participation, the Pacific Islanders addressed the challenge of building local capacities for adaptation to climate change. Local realities and cultures were represented. The question: How to foster the implementation of adaptation measures?

Presenters:

Mr. Riibeta Abeta, Kiribati Ministry of Environment, Lands and Agriculture Development, and participants from the Pacific Islands.

Mr. Dean Solofa, Secretariat of the Pacific Regional Environment Programme (SPREP)

Mr. Dean Solofa opened by stating: "The Pacific is paradise to many, but is also home to us." In the background, we heard music from a Pacific Island group called Te Vaka. While showing photos of the diverse islands and people of the Pacific, Mr. Solofa described the features of the Pacific islands, noting that some are volcanic; others are lowland atolls. The Pacific cultures and communities include Melanesians, Polynesians and Micronesians, each originating in distinct regions. In general, Mr. Abeta explained, Pacific Island people are kind, silent and strong-minded.

Climate change is affecting the Pacific Islanders now. Measures of climate change date back for over 100 years, and the data provide clear indicators of rising temperatures. Referring to an analysis of regional data a few years ago, from 1975 to 2000, the mean temperature records across the Pacific show an increase of approximately 0.5 degrees Celsius, in similar concert to results from a similar global estimate for the same time period. While much important meteorological data exist in the Pacific region, there is still a need to analyze systematically and become more precise.

All islands are affected by climate warming, with increases in temperature resulting in changes from fishing and agriculture to health and water. In the last drought season in the Papua New Guinea highlands, there were a reported eight deaths due to starvation, and over 600 people were displaced due to food shortage, something of a rarity in the Pacific with rich traditional food security practices, but pointing to a deeper cause rooted in ever more extreme climate variability. Climate change is causing coral reef bleaching, which has an effect on livelihoods, as fishing grounds are damaged and tourism decreases. Island nations, such as Samoa, are increasingly vulnerable to extreme weather events such as tropical cyclones. Coastal erosion is causing major land use and legal issues. As coastlines recede, communities are adapting and trying to cope.

There are about ten regional organizations addressing the concerns of climate change. They include the Secretariat of the Pacific Regional Environment Programme (SPREP), South Pacific Applied Geosciences Commission (SOPAC), Forum Secretariat and the University of the South Pacific, and working alongside also are international organizations such as the Red Cross. Their activities vary,

including focusing on the science of climate change and forecasting, addressing community-level adaptation, offering technical training, working on information dissemination through the media, and providing education through regional universities and distance learning. In some cases, adaptation projects are designed to stop harmful practices, such as sand mining, which actually increases the rate of coastal erosion.



Recalling the field trip to Zeeland Mr. Solofa noted that, although The Netherlands is below sea level, it has the resources to manage in a way that is not possible in the Pacific. "You get a sense of security in The Netherlands when taking into account the history, the technological capability, the psychology of people who have taken a part in this "battle" with the water. In the Pacific you do not have this sense of security or resilience, but rather an immediate sense of vulnerability that can be overwhelming." The Pacific region faces limited land resources, vast distances among islands, and limited access to the resources for the kind of adaptation methods that exist in The Netherlands.

Mr. Riibeta Abeta talked about capacity building and the challenge to Kiribati government officials of prioritizing vulnerabilities. The shared spirit, he explained, is recognizing that we need to involve the communities and discuss what has to be done. "The knowledge that we need to cooperate between and within communities is very strong." At community levels, adaptation initiatives consider the roles of the people and leaders in the community, such as the role of women. Examples of adaptation projects include water supply and health projects, projects related to sea walls, and using education, training and media such as music. Community responses to disaster are often quicker and more efficient compared to governmental management.

In Kiribati, professional training includes skill building and role-plays. Assuming key decision-making roles, participants respond to climate scenarios, such as forecasts of drought or heavy rains. Within limited time, they may organize proposals or negotiate with the Ministry of Finance. Various tools are used to propose budgets and adaptation measures. These training activities provide practical opportunities for planning and negotiation.

Pacific Island participants in the audience were invited to join the discussion. **Dr. Lia Maka** of Tonga called for a holistic approach to adaptation. She noted that there is still a departmentalized view to climate adaptation, while there should be an integrated approach. There are questions of coordination between different sectors like agriculture, health, and education, and access of key information is not available to the people that need it most. "In this context," she asked, "how much integration and collaboration is going on between Pacific island governments and sectors, when something happens on one of the islands?"

Ms. Diane McFadzien of the Cook Islands stated that there is experience of climate change in everyday life. One challenge is that many people feel that climate change is not man-made, but an act of God. Organizations such as WWF have learned to work on climate awareness by discussing stewardship within the Christian communities. Ms. McFadzien expressed a strong interest in learning more about the HIER campaign. "We also need to learn from our past experiences," she added. There have been droughts before and there has been flooding. The traditional knowledge can be used to prepare for the future.

Dr. John Hay of New Zealand discussed Pacific cultures, noting the statement by Mr. Solofa that several Pacific Island people died from starvation. On a world scale, he noted, it would seem like a minor issue, just a few people. But in the Pacific, communities are very close. People and land are two of the essential values of life in the Pacific. Dr. Hay agreed that climate-related data can be traced back over a century, and there is evidence of systematic change. Climate change is the reality now. He suggested that the Pacific islands are not going to be displaced by long-term or slow changes; instead, he is concerned about the sudden and extreme weather events. Climate change threatens Pacific societies and cultures. Dr. Hay concluded with respect for the resilience of the Pacific people.

Ms. Tupou Raturaga, a diplomat in the Fijian Mission to the European Union, noted that it is very difficult for Pacific islanders to get these messages across. The delegation is relatively small, with responsibilities that include many organizations. In most of her work with international institutions, the environment is a minor issue compared to negotiations over trade issues.

Dr. Bill Aalbersberg of the University of the South Pacific explained that the source of much frustration is the endless call for studies, and more studies. "We have done vulnerability studies in Tuvalu for over 20 years. People kept on calling for more studies, while we knew what was going on already in 1987." Professor Aalbersberg proposed that it is time for action, with adaptation measures that include applied research designed to learn from the ways that communities are best coping with the impact of climate change.

Ms. Madeleen Helmer of the International Federation of Red Cross and Red Crescent Societies has worked extensively in the Pacific.

She noted that discussions of climate change tend to focus on global temperature and sea level rise. She too is very concerned that extreme weather events are more problematic.

In closing, Mr. Abeta and Mr. Solofa emphasized that there is a need for practical options to cope with climate change. The learning experiences in The Netherlands are helpful in contributing ideas for future developments in the Pacific and other island nations.

3.6 Mainstreaming Climate Leadership and Adaptation

How to integrate adaptation measures within sustainable development projects? In this session, we organized into four affinity groups to develop a gallery walk of ideas for building capacities to address vulnerabilities. In the following pages, we summarize discussion notes of four affinity groups: (1) Coastal management, (2) Disaster risk reduction, (3) Water and health, (4) Cities for the future.

3.6.1 Coastal Management

Facilitators:

Mr. Riibeta Abeta, Kiribati Ministry of Environment, Lands and Agriculture Development

Ms. Ellina Levina, Organization for Economic Cooperation and Development (OECD)



Mr. Riibeta Abeta began by describing coastal management projects in the Pacific Islands. He recognized the difficulties of implementing adaptation measures in a sustainable way. Issues include coastal erosion, mining of coastal resources, salinity intrusion in fresh water resources, and improper land use. Adaptation has been a dynamic process. Bottom-up approaches identify existing options in the community, replicate good practices, integrate these measures into policies, and implement at national levels. Two examples of adaptation projects in Kiribati are Offshore Mining (to reduce coastal mining practices) and Integrated Coastal Zone Management, to replace mangroves along the coastline. By educating local community members, these projects enhance participation and the long-term adoption of environmental practices. Among the many challenges are finding ways to involve investors and donors in the process, or

maximize the existing investment, prioritizing of activities, sustainable policies and monitoring.

Ms. Ellina Levina discussed the integration of adaptation into laws and policies in different sectors of coastal management. She noted that adaptation measures vary according to the context. For example, adaptation options for wetlands are different from those for coastal human settlements. Therefore, an integrated approach to adaptation is needed. It is necessary to consider legal provision, institutional arrangements, policies, management practices and available information tools, in thinking about adaptation. Some of these provisions may facilitate adaptation, while other can impede adaptation efforts. For example, some existing legal provisions may facilitate mal-adaptation by encouraging development in hazardous areas. Adaptation should be guided by the same principles as Integrated Coastal Zone Management. It should be a dynamic process that evolves together with new information, experiences and ideas. Coordination of all relevant sectors and stakeholders is needed. And there should be a consideration of environmental and socio-economic uses of coastal zones.

Questions to the group: *How to engage ministries? How do we implement adaptation? To protect what, who and where? What are the steps for research, policy, and implementation? What are the requirements, besides money? What about the degree of political willingness and how can we enhance it?*

General recommendations for coastal resource management included:

- Educate the population and make them aware of the causes and consequences of climate change.
- Local universities have a crucial role in research to monitor adaptation projects at community levels.
- Take action with key stakeholders, including communities, government, NGOs, and the private sector.
- Implement adaptation measures at local levels, because of the appropriate facilities and practical capabilities.
- Enhance political willingness. Build awareness by working with communities to address their needs.
- Involve the international community; consider working with insurance companies to create incentives and laws. At the moment, adaptation is viewed as reallocation.

Specific ideas for mainstreaming adaptation:

- Use climate change information in coastal planning.
- Enhance multi-stakeholder participation.
- Projects need to be “driven” from local community levels, with the support of national governments.
- Build on traditional knowledge and expertise.
- Be willing to adapt to new ideas or information.
- Establish best approaches for sharing information.

- Provide access to information for decision making (at the right time and at different levels).
- Make use of participatory tools and techniques.
- Facilitate multi-sectoral planning and monitor the results.
- Provide access to adequate funding.
- Pilot demonstration projects, monitor the results, and build upon the experiences.



3.6.2 Disaster Risk Reduction

Facilitators:

Professor Deolall Daby, University of Mauritius

Professor Wayne Hunte, University of the West Indies

Professor Wayne Hunte began by describing disaster risk reduction experiences in the Caribbean. He explained that temperature increases, frequency of extreme weather events, and sea level rise are major concerns because of the costs to infrastructure and tourism. Challenges include the social and government apathy, as climate change is abstract and there is limited understanding. There is a lack of capacity for research to predict what can happen or to guide adaptation. There is also a lack of public awareness campaigns.

Strategies in the Caribbean include increasing public awareness and access to information; building micro-skills levels; taking basic precautionary measures for hurricanes. A Climate Change Center was established in Belize, and the universities have joined in a consortium of small island states (UCSIS) to foster partnerships and resource exchange. The University of the West Indies is the Secretariat for UCSIS.

Professor Deolall Daby explained that the University of Mauritius has developed a Masters programme in Sustainable Environmental Management jointly with the University of Technology, Mauritius. He outlined that henceforth climate change measures will be integrated in most of the new study programmes in science being designed at the University of Mauritius. The discussion of these components led to a group discussion of concerns and recommendations for mainstreaming disaster risk reduction.

Recommendations for mainstreaming disaster risk reduction include:

- 1 Enhance local ownership:
 - Convince people that we can do something about climate change. Address the human dimensions of adaptation in practical terms: security, economics, and development. Cultural leadership and well-designed communication strategies are extremely useful. There is no single message for everybody.
 - Need to address climate change through local plans.
 - Improve ways that local governments deal with recovery following extreme weather events.

- 2 Foster more disaster-resistant communities:
 - Target community programs prior to disasters. We need more emphasis on prevention/risk management of community vulnerabilities. We need to promote "proactive ways".
 - Pay attention to the direct impact on livelihoods.
 - Make the communities aware of useful resources.

- 3 Transform climate change from an environmental phenomenon into a multidisciplinary challenge:
 - Need to better integrate risk reduction and development.
 - Give greater priority to the mitigation of climate change.

- 4 Strengthen centers of excellence and establish cooperative networks among them:
 - Go beyond the regional networks to share resources and experiences.
 - Some of the academic leaders of climate change keep the knowledge to themselves perhaps because of the fear of competition; it should be an issue of citizenship and cooperation.

3.6.3 Water and Health

Facilitators:

Dr. Lia Latu Maka, Secretariat of the Pacific Community

Ms. Diane McFadzien, World Wildlife Foundation

Dr. Lia Maka described two participatory projects that use a bottom up approach. **Ms. Diane McFadzien** discussed the projects with the groups and together they developed a list of recommendations for mainstreaming water and health.

Climate warming increases the occurrence, the effects, and the geographical spread of infections and diseases. The habitat of dengue and malaria carrying mosquitoes is spreading and more islands may be affected. The mosquito causing dengue is a daytime mosquito, so the strategy to distribute nets does not work. The people need to know exactly which mosquito is dangerous and which is not.



The identification of diseases is not the problem; the response remains too slow. Water and health programmes and measures are of the "no regret" types. They are worth doing anyway. WHO mainly funds healthcare and the EU mainly funds agriculture.

Bucket Drip Irrigation is a EU-funded project in response to prolonged drought and low availability of irrigation water. A dripping system brings the right amount of water exactly where it should be. Water use is more efficient, and it allows farmers to grow other marketable crops and thereby improve their income generating options. The project has strong monitoring and evaluation to improve knowledge and encourage learning. It has now been successfully up-scaled by several farmers.

Pacific Public Health Surveillance Network (PPHSN) is a regional project using training, networking and partnerships. The goal is to reduce the impact from common infections and disease. One strategy is to improve communication in and between communities by using local radio, e-mail, and mobile phones in order to create early warning systems for disease outbreak.

Recommendations for mainstreaming water and health:

- 1 Improve communication: Climate variability is quite well predicted, but awareness is not enough.
 - Use new technologies: early warning systems are very dependent on communication networks on and between islands. New community-level communication options include Internet, cell phones, etc.
 - Early warnings systems should be used carefully to avoid panic.
 - Develop user-friendly reports: monthly climate updates offered by SPREP are not understandable for many users. Cooperation between SPREP and the end-users would be helpful.

- 2 Address gender differences:
 - The women are responsible for fetching the water and therefore more prone to get vector borne diseases.
 - Women's networks more readily share health and nutrition information within communities.

3 Encourage local ownership:

- Developments should be bottom-up; adaptation to climate should start at the grassroots level.
- Programmes improve if (partly) locally financed, for real local ownership.

4 Have an exit strategy:

- Some low-lying islands are likely to be submerged. Even if we could completely stop CO₂ production now.
- Formulating an exit strategy for these islands would be a very wise preparatory measure; it would also make a very strong message to communicate to the world.

3.6.4 Cities for the Future

Facilitators:

Dr. Carol Howe, SWITCH Programme of UNESCO

Ms. Xianfu Lu, United Nations Development Programme (UNDP)

Dr. Carol Howe of Australia described her experiences managing urban water programs, including a project in Sydney and a global project with 32 partners that also deals with climate change and economics. How will climate change affect water and waste water systems? The more pressing issue is how to get a sense of urgency into the debate? Dramatic changes in Australia have been taking place: Brisbane now has a two-year water supply; Melbourne now has a water supply deficit (went from 30-year surplus to a deficit in a five-year period). People are only now starting to accept water supply shortages. People don't believe that this could happen in such a short time frame, and the challenge is getting people to accept this uncertainty. Australia now needs to prioritize and quantify those risks.

Trained as an applied meteorologist, **Dr. Xianfu Lu** works for the United Nations Development Programme as a technical adviser. Her responsibility is to provide technical and policy assistance to over 130 developing countries in addressing climate change vulnerability and adaptation to climate change within the framework of preparing their national communications to the UN Framework Convention on Climate Change (UNFCCC). She highlighted that it is important to link the future of cities and climate change, because

- Almost 50% of the world's populations live in cities, increasing to 60% by 2030. As a result of this, over 75% of energy consumption is directly related to cities and hence urban emissions of greenhouse gases will be an increasing driver of global warming.
- At the same time, urban areas, particularly in coastal regions in the developing world, are vulnerable to climate change and its impacts. In turn, these impacts induce energy-intensive adaptations such as air conditioning, pumped drainage or desalination. The mitigation of these impacts and sustainable options for adaptation in vulnerable cities require integrated strategies involving key stakeholders.



- Cities have a great potential to instigate innovative solutions to climate change (in the form of both adaptive measures and emissions reductions).

The key challenge is to reconcile urban development and sustainable solutions to climate change.

Discussion of challenges

The group engaged in an active discussion of risks, politics, social equity issues, and sources of inspiration. Recommendations for model cities of the future followed. Major discussion points are summarized as follows.

What constitutes a sustainable city?

Technologies are helping, blending innovation with standards, but people fall into the pitfall of trying to follow the footsteps of predecessors rather than leapfrogging. What are the best practices in the world? India today uses 2x more water per day than Sweden. It is not only an issue of frugality, but also a matter of human rights. There is much to be learned from others' experiences.

What is the implication for urban energy consumption?

Desalination is a major issue, as is waste water treatment. Energy and water systems are co-dependent! So it is essential to find local solutions and treatments without polluting, and promote responsible actions and practices such as switching air conditioning, drainage, waste management, and water supply.

Where is the consideration of equity?

Does sustainability imply equity? Will our definition of sustainability allow poor people to have a voice? We are talking about haves and have-nots, thus how would "Cities of the Future" be any different? When you develop an eco-city, who is it for? Ideally it is NOT a city for the rich. New mega cities will have more poor than rich. The city will be literally built by the have-nots. How do you find a place for them to live within it after they built it? Are low-income communities

included? How to merge high and low social classes? Haves will deal with climate change, have-nots will not. The have-nots are still left out.

How to help the urban vulnerable to adapt?

Cities are still growing, adding new residents in vulnerable areas. How to reduce the vulnerability of people in informal settlements or areas hit by extreme weather? The key to adaptation is identifying risks, but once high-risk areas are identified, depreciation of that area follows. Property values go down, investments no longer go to that area. There is massive loss when a zone is designated a high-risk zone. Insurance rates go up. Where do you draw the line when managing uncertainty, especially when people's investments are involved?

How many cities will we need to rebuild in the next ten years?

Urban planning, housing, water and other decisions can take decades. How do cities get to reach that more natural ideal? In China, people are adapting by making buildings with rice paddies on top of them. In one area of Birmingham buildings are rebuilt with green roofs; it adds biodiversity and works for storm water retention. It's not a major structural issue; it's more of a "fright" factor for architects and builders because they haven't dealt with it much.

How to increase the awareness of risk (e.g., associated with green buildings)?

There are lots of nutrients in green buildings. Why not use waste/excess energy to grow things on the roof or collect fresh rainwater? A building can become a self-contained system. But the process moves so slowly because of stupid questions ("who's responsible"). Funding is about getting more demonstrations on the ground. We need to set positive goals. We need demonstration projects, for green buildings and closed loop systems – do it to get past the fear that can't be done. Private sector and NGOs have incentives. Businesses do it for their reputation. Universities can serve a role in cross-sector planning and in getting everyone around the table to come up with solutions. At American University, for instance, students suggested that main buildings be redesigned completely green. McDonough architects showed up, and students participated in the design. Institutions need to monitor progress of sustainable cities, i.e. UN HABITAT or an independent NGO. An independent body would be more effective.

Recommendations for mainstreaming Cities for the Future include:

- 1 Learn from nature:
 - Nature offers inspiration for sustainable systems. Develop effective, dynamic and adaptive systems, with recycling and the collection of fresh rainwater.
 - The system is contained: everything goes into something else. Footprint of Zero!
- 2 Foster identities with:
 - Care and connection to community.
 - Pride and willingness to take care of the city.
 - More diverse communities and sub-communities.
 - Social equity.
 - Citizen participation.
 - An ethic of responsibility (Earth Charter as model).
- 3 Develop a positive agenda for climate adaptation:
 - Resilience and safety, with solidarity in risk sharing.
 - "Champions" for sustainable cities (e.g., Transparency International).
 - Scale-up funding for demonstration projects (green buildings, etc.).
 - Universities with a role: involving all stakeholders in cross-sector planning.
 - Private sector and NGO incentives to develop innovations and technologies.
- 4 Integrate rural/urban:
 - Reduce the urban footprint (make urban living less damaging).
 - No waste sent to rural areas.
 - Efficiency (use waste for roof gardens).
 - Inclusive of poor, with affordable housing.
- 5 Promote interdependent Governance:
 - Public awareness and education build political will.
 - Democratic, not autocratic, with decentralized systems
 - Cooperative planning across communities and sectors.
 - Laws understood and fair.
 - Citizens self-policing.
 - Manage corruption.

4 RECEPTION AND CONFERENCE DINNER

On the evening of 13 February, the conference participants were invited to a City Hall reception hosted by **Mayor W.J. Deetman** of The Hague.

The conference dinner was at the Bilderberg Hotel in Scheveningen. **Mr. Ron Kingham** of the Institute for Environmental Security introduced **Mr. Tom Spencer**, Vice Chairman for the Institute for Environmental Security.

4.1 Mayor W.J. Deetman of The Hague

Mayor W.J. Deetman welcomed the participants to The Hague, which bears the honorable name “city of peace, justice and security”. He explained that The Hague is a fitting site for the Conference for two reasons. First, it is located directly on the sea and has significant experience with the consequences of climate change. It is clear that environmental degradation provides for increasing security risks. Second, the University for Peace organized this Conference. The mission of the University for Peace is to address the causes and consequences of conflict, promote cooperation, and lessen threats to world peace, security and development. The Hague is a centre of expertise in peace, sustainable development and international law. It serves as the host city for prominent institutions such as the International Criminal Court and the The Hague Academic Coalition, which is a consortium of academic institutions in the fields of international law and international relations.



4.2 Dinner Speaker: Mr. Tom Spencer

In his speech entitled “Low-Lying, High Profile?” **Mr. Tom Spencer** recognized the small islanders as legitimate advocates for mitigation: “I believe you represent a group of countries licensed to be the voice of the planet – permitted to tell the truth because of the desperation of your situation! Your conference programme on adaptation is excellent, and I want to plead that part of your time continues to be devoted to mitigation.” Decisions about burning forests or cap and trade matter most to small islands in that they directly raise sea levels.

Mr. Spencer expressed optimism that the politics of climate change have shifted – perhaps influenced by extreme weather events, the latest IPCC report, the Stern report, and President Putin’s “penchant for turning off pipelines”. In America, after ten years of US delays, we may be “deluged in American enthusiasm.” After describing opportunism related to energy and spin associated with climate change, Mr. Spencer concluded that The Hague would be an ideal place for a memorial to the victims of man-made climate change. In closing, he challenged the small island participants: “Speak for the planet; your motives will go unquestioned!”

Mr. Marius Enthoven served as the Chair for the morning sessions. This section of the conference was designed to develop strategies for action that involve higher education institutes. These discussions took place within the context of the IPCC report, which confirms the increasing risks and vulnerabilities associated with climate warming. Mr. Enthoven introduced and welcomed Mr. Rob van Dorland.

5.1 Assessing Sea Level Rise and Vulnerability



Presenter: **Mr. Rob van Dorland**, Royal Netherlands Meteorological Institute (KNMI)

Mr. Van Dorland's presentation incorporated the findings of the 2 February 2007 IPCC Assessment, the 4th report since 1990 by the Intergovernmental Panel on Climate Change of the United Nations. Major points of discussion included:

- The main conclusion of the IPCC report is that most of observed warming is now determined, and unequivocal. Centuries of warming, rising seas and shifting weather patterns are predicted. These are caused by the emissions of greenhouse gases in the atmosphere. Best estimates of temperature increase are between 1.8 - 4.0 degrees Celsius over 1990 levels by 2100.
- We know that the increase in greenhouse gases is human influenced – scientific data show this. The IPCC assessment considers various sources of climate change: volcanic eruptions, solar activity, southern oscillation, and human influences. If there were no human influence, temperature would have decreased over the last 50 years – which is not the case. Human factors correlate with temperature increases.
- Even if we could reduce greenhouse gases now, the climate would still continue to change, and it would still be necessary to adapt to climate change. In terms of rainfall, we see an increase in some regions of extreme and heavy precipitation, and we also see increasing droughts in other regions. Droughts in dry areas will worsen, as dry areas become dryer. From observations over the last 40 years, we know that the intensity of tropical cyclones is increasing, and for the future, we don't predict an increase

or decrease in number of cyclones (also called hurricanes and typhoons), but more importantly, an increase in the intensity.

5.2 Engaging Higher Education

How to mainstream climate issues and build adaptation capacities through higher education? In the context of the IPCC assessment and the gallery walk of ideas for mainstreaming, we considered how higher education might build capacities for leadership, local adaptation and sustainable development.

Presenters:

Dr. Bill Aalbersberg, University of the South Pacific

Mr. Fazal Ali, University of West Indies

Mr. Ton Bresser, UNESCO-IHE

Dr. Mary Jo Larson, University for Peace



Dr. Mary Jo Larson began by noting that the risks of climate warming in the IPCC assessment have been foreshadowed in earlier reports and agreements, including the 1992 United Nations Framework Convention on Climate Change. Policy negotiations continue, and the Mauritius Strategy for Implementation and other recent agreements now formulate more detailed plans for the implementation of UN conventions and protocols.

How to best transform policy "rhetoric" into concrete action? Participants offered examples of adaptation measures that address coastal management, water and health, disaster risk reduction and cities of the future.

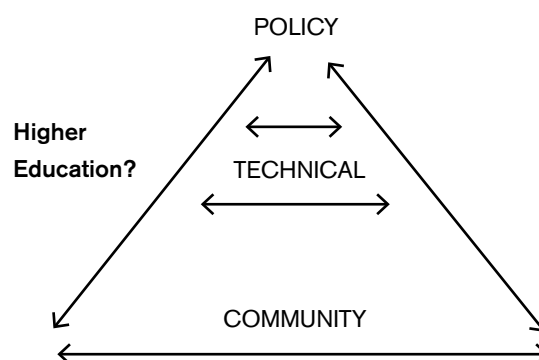
Dr. Larson noted the prominence given to community-level action by drawing a triangle and placing the word *COMMUNITY* at the wide base. The triangle illustrates the dynamic inter-relations required to transform behavior in societies.² With global populations now at 6.5 billion, community engagement is a priority, and the challenge.

² John Paul Lederach (1997) proposes that technical experts are strategically positioned between policy makers and community leaders. With access to both, they are potential mediators for peace building and the transformation of society's infrastructures.

POLICY is negotiated at the highest level of the relational triangle.

At a mid level, between policy makers and community leaders, are TECHNICAL professionals.

How does higher education contribute to the implementation of adaptation policies at community levels?



Dr. Bill Aalbersberg began with a discussion of university contributions at COMMUNITY levels. Dr. Aalbersberg speaks fluent Fijian and is recognized for his participatory approaches to integrated coastal management. Dr. Aalbersberg explained that at the University of the South Pacific (USP), all Masters of Science students are required to engage in participatory community activities. The aim is to provide concrete, practical, "hands on" learning experiences.

Challenges: to respect local leadership, build upon local traditions, establish the best practices, and adapt to the local knowledge. Projects at village levels foster "bottom up" approaches to capacity building.

What do we do? The University of the South Pacific offers four categories of coursework that are relevant to climate change and adaptation.

- 1 Bachelor-level courses include environmental sciences, marine studies, agriculture.
- 2 Post graduate courses cover environmental and social development, governance, education, tourism.
- 3 Workshops and courses for professionals in environmental science cover the issues of climate change and incorporate indigenous knowledge, leadership and conflict resolution skills training (Note: targeting professionals much better than undergraduates).
- 4 Distance education courses offer opportunities to interact with students in real time.



Mr. Ton Bresser described the TECHNICAL level capacity building offered through UNESCO's Co-operative Programme on Water and Climate (UNESCO-IHE). He began with the statement: "There can be no sustainable development without proper notice of climate change and climate variability."

The mission of UNESCO-IHE is to train professionals from developing countries in order to provide the technical knowledge and skills at the local level to organize sustainable water management. Courses cover all aspects of climate change (cause-effect chain, adaptation, institutions). All activities are offered in cooperation with international institutions, universities, and networks of people.

What do we do? UNESCO-IHE offers a variety of capacity building options with a focus on Water, Environment and Infrastructure. It teaches students from developing countries and countries in transition (98% return home). And it builds partnerships with local organizations.

Important aspects of Post-graduate education at the UNESCO-IHE Institute:

Co-operative Programme on Water and Climate:

- Summer course (2 weeks) on Climate Change in Integrate Water Management
 - 1 week teaching theory, 1 week cases and practical application

- Theoretical case: focus on developing countries: near tropics, data poor situation etc.
- MSc-thesis subjects on Climate Change
- Advanced Institute on Global Environmental Change and the Vulnerability of Water Resources in the context of Millennium Development Goals
 - Post graduate
 - Focus on sub Saharan African region
- Preparation of short courses on climate change in water management
- Preparation of e-learning course
- Vast and active network of alumni
- Offer refresher courses, mainly in the region



Dr. Fazal Ali considered the role of higher education at POLICY levels, with examples from the University Consortium of Small Island States (UCSIS). The mission of UCSIS is to enhance the capacity of graduate education institutions in small island states by facilitating the development of the institutional and systemic capacity needed to implement the Barbados Programme of Action. The objectives include:

- Improve information flows among members on course offerings, facilities, student needs and relevant documents.
- Encourage cooperative curriculum development, research, indigenous knowledge management, and outreach in the key areas of sustainable development of SIDS by supporting resilience building for sustainable development.
- Share research findings and reference materials.
- Use the results of SIDS-focused research and field work to assemble curricula for island development.
- Recommend standards and procedures for inter-institutional accreditation among Members.
- Ensure the sustainability of the Consortium by seeking and securing appropriate funding.

UCSIS offers a strategic, informational, and operational platform for implementing these objectives:

- 1 *Strategic* because it signals to stakeholders the presence of a focal point for the articulation of the Mauritius Strategy and the Barbados Programme of Action, both of which constitute the United Nations policy agenda.
- 2 *Informational* because it serves to provide stakeholders with information on general directions, present activities, progress, and the passages we intend to negotiate with their support. The information is partitioned into sources that are public and those that are private. (A collection of documents and tools are provided on an intranet for use by membership.)
- 3 *Operational* because it is designed for scalability that will allow us to add the tools for registry and bursary functions, content creation and delivery, knowledge management, joint research, web archival tools like D-Space, a student record system, connectivity of library holdings both electronic resources and paper, and a virtual project management centre to support the curriculum implementation process. To date, none of these functionalities are public because the UCSIS will meet in the UK in April to finalize the curriculum and other related matters associated with the provision of a degree programme in a blended learning environment that involves, f2f learning, e-Learning and Problem Based Learning. After that meeting the platform will be propagated with both the tools and the content. See the UCSIS website: www.myucsis.com.

Regarding the design of curricula that build climate leadership and fosters local adaptation:

- 1 The intended curriculum must be framed in the broader context of the ecology of learning that includes pedagogy and other related dimensions of higher education (HE) that will involve cross-border HE.
- 2 Designing is a reflective practice that brings into being patterns and perspectives which are not copies.
- 3 If the curriculum is intended to build leadership then its design must depart from the paths that lead and contribute to the traditional diploma disease. Leaders are people who challenge the adequacy of the given.
- 4 We must now distinguish two types of curriculum. *Curriculum as a track* prescribed by those who predetermine the outcomes as well as the path. And then there is *curriculum as thinking*. Clearly, *curriculum as a track* has led to great advances in the development of economies everywhere. Curriculum as prescribed course serves to transmit the certain and the fixed. *Curriculum as thinking* serves to transform teachers, learners, texts, and content. It is based on a capability approach to curriculum design that produces people who can go beyond the information given. That is a vastly different epistemological stance from a competency approach to curriculum.

Challenges:

- 1 First there is the challenge of Cross-Border Higher Education itself:
 - a Quality Assurance within and across institutions and this affects accreditation standings.
 - b Intellectual Property and open source material.
 - c Open e-Quality Learning Standards and International Bench marks.
 - d The Bologna Declaration and subsequent documents on HE that link the Americas with Europe and other parts of the world in the HE arena.

- 2 Within university systems, there is the challenge of Trans-Disciplinary Higher Education:
 - a Departments and degree programmes within them remain insular and cloistered.
 - b The Professorial Chair as an organizing principle around which the University persists to manage its thinking does not lend itself very easily to cross department and cross faculty configurations for degree programme design and delivery.

- 3 Content Management, Content Development, Content Delivery, and Content Ownership:
 - a Since the 1980's cross border HE through the mobility of students, academic staff, professionals and programmes, has grown considerably. In parallel, new delivery modes like mobile learning and cross border providers have appeared, such as campuses abroad, and even for profit providers. These matters are very troublesome.
 - b Both UNESCO and the OECD have issued cautions about the management of rogue providers in HE arena. They have issued guidelines to minimize the risk of providing misleading guidance and information to students, and cautions about low quality provision, as well as degree mills that provide qualifications of limited validity. We must therefore take a closer look at:
 - ADDIE model for on line content development (Analyze, Design, Develop, Implement, Evaluate).
 - EIFEL agreement on quality standards for e-Learning.
 - The ExE content editor and consider what our e-Author's Contract might begin to look like.

5.3 Measures of Capacity Building

What are the research and evaluation priorities? In this session, we discussed measures of capacity building for adaptation and sustainability and suggest indicators of university performance.

Panel Chair: Mr. Kartikeya Sarabhai, Centre for Environmental Education

Presenters:

Dr. John E. Hay, University of Waikato

Ms. Diane McFadzien, World Wildlife Foundation

Ms. Janet Strachan, Commonwealth Secretariat

Mr. Kartikeya Sarabhai oriented the participants, noting that this discussion is to consider capacity building opportunities in university education. We have seen the need for education and participation in this process, looking at the university system in relation to policy, technical training, and local community action. Ms. Janet Strachan will address policy, Dr. John Hay will focus on technical levels, and Ms. Diane McFadzien will go over the community role.

Mr. Sarabhai framed the discussion in the context of sustainable development. "Do we deal with climate change separately, or do we put it in the context of lifestyles impacting the globe?" He noted that many changes are happening simultaneously.



Ms. Janet Strachan: Over the last year, the Commonwealth Secretariat has conducted a detailed analysis amongst its 53 member states, half of which are small states, making up an important constituency. The meta-level analysis explores different areas of needs in capacity building for climate change. What do we need to address?

- 1 We need a greater capacity for small states to understand what is coming. We talk about capacity building or adaptation for climate change. We have a capacity need to understand what is going to happen to the climate, including the expansion of modeling capacities.
- 2 We need an adaptive capacity, to know how to respond professionally when this change happens. Disaster risk reduction in communities serves as a starting point, making adaptation relevant to people's lives. We need to help others adjust dynamically as climate change happens. We need more detailed analysis of the impact on water, tourism and other industries.
- 3 We need to facilitate the learning for small state professionals
 - they have to cover such a broad area. A few experts do all the work. Universities need to offer flexible education, allowing professionals to take training. We need courses to help professionals

- architects, water specialists, and urban planners etc. to adjust for the future. Technical professionals need to be included in policy making and represented in the public face of climate change. We need professors in those sectors with more skills, including:
 - a Cost-benefit analysis in adaptation and disaster.
 - b Negotiation and diplomacy skills for sustainable development.
 - c Adaptation research on the socioeconomic conditions of climate change.
- 4 Small states have few resources. Some are well organized with masters programs, and yet there are geographic gaps, especially in the Indian Ocean region. The Caribbean and Pacific are more covered, but the Maldives and the Seychelles have no tertiary education in these areas.

Other challenges: There is a lack of funding predictability. We need a stable and expanded provision of funds. We need to provide enduring platforms for countries to draw upon. There is also the challenge of out-migration. In addition to brain drain, as climate change gets worse, we will see more of an exodus from SIDS, of people with the academic capacity that we need.

Dr. John Hay highly endorsed Janet's comments and thanked her for the comprehensive and practical analysis. Drawing on one of her points, his presentation focused on the training of professionals: "They are at the front line responding to climate change."

What do we do with professionals such as engineers? Engineers are designing for the next 50 years of climate change rather than the next five. There is a huge difference in terms of design of safe infrastructures. Most is designed with a 25-year life span, but in SIDS, that infrastructure needs to last longer. Practicing engineers need to return to education environment and recognize that their skills are not constant, must adapt to demands of climate change. Training includes green programs, make sure professionals are exposed to climate change components.

Dr. Hay has been associated with an initiative in Japan at Ibaraki University. It was designed with three criteria:

- 1 Education and training must meet needs of users of expertise.
- 2 Education and training must meet needs and interests of students.
- 3 Education and training must be consistent with the capabilities of the institution.

Japanese universities are very structured and compartmentalized. "Adaptation Science" ("science" used in broadest possible context here, includes social science and humanities) is a new interdisciplinary course designed to get students to think in an integrated way about adaptation to change in general, not just climate change. It is a major challenge, and the university has had to adapt to meet this criteria.

This is a pilot one-semester course, serving as a precursor to a degree program. (It is risky to put a degree program in place right away.) It is for master engineers students, and taught in English, but the technical capability in English is shaky. Dr. Hay is team-teaching this international course at Ibaraki University, which caters to students from various Asian and Pacific Island countries.



Why engineers? The University offers engineering planning as part of the curriculum. The course sensitizes students to consequences, integrating social science and humanities. It is offered on three campuses, taught via video link. The students are as competent in planning as any experts in the world. Examples from case studies:

- *Negotiation:* Case studies get students to understand why they are working in their particular environment. They learn about the politics behind the Kyoto Protocol to understand the context. We use lots of role playing, representing US, Japan, and SIDS. (It goes against Japanese culture to negotiate face to face.)
- *Adaptation:* Traditionally roads should be built away from the coast. Japan does the opposite; it builds roads on the coast as a defense mechanism. Dr. Hay started a class debate on the situation – what would be the total costs of keeping roads on the coast? Build into the design storm surges, coastal erosion, flooding, etc. Students with planning background do well in this exercise. Challenged by student: "We can't put roads inland, that's impossible: it will lead to destruction of shrines and temples."

"Adaptation Science" is an example of innovative interdisciplinary courses responding to the need for professional training. There are other needs for innovation – instructors must be very responsive and reflect the values that students bring into learning environments. These courses add value to learning about climate change.

Mr. Sarabhai noted that capacity building exists at a variety of levels, and the learning strategies and measures of success are different and must vary accordingly.

Capacity building strategies need to be country specific, considering cultures and ecologies. Target groups include citizens, communities, students, diplomats, academics, NGOs, business, media, government officials, and law enforcement. Mr. Sarabhai identified four areas of capacity building:

- 1 *General awareness*: Covered by NGOs, consumer labeling, and becoming part of the political and development debate. What is the role of the media?
- 2 *Formal education*: Incorporating sustainable development into curriculum, with trained teachers, educational materials, links between education institutions and community efforts, internship and outreach programs. Universities are knowledge hubs and there is a need for outreach to communities. Regional Centers of Expertise (RCEs) link universities and schools with other stakeholders, adding to the capacity of discussion.
- 3 *Mitigation*: Requires participation in international meetings, to influence international law and treaties, in networking and developing action plans (e.g., national action plans, sector-specific plans, etc.)
- 4 *Adaptation*: Requires technical capability with research and development institutions. Build awareness and skills among technical people, document case studies, make educational materials available, offer grants and loans, and raise awareness among vulnerable communities.

Ms. Diane McFadzien is a program officer working for WWF in Fiji. Programs in the Pacific build professional skills and work with communities. WWF programs have two tracks:

- 1 Training for government policy makers, especially in key development sectors, is taught from the perspective of local professionals. How to influence policy? Who are the key decision makers? What are the community needs? Role-plays help to develop communication skills. Approaches are multidisciplinary. Training increases knowledge of appropriate technologies. Skills include developing adaptation plans.
- 2 Training at the community level takes place through workshops. WWF brings in local experts, but does not address climate change as a stand-alone issue. It has to be relevant to the communities and what they are doing. Communication seeks to demystify climate change information and make it locally relevant. Among the most needed skills are exit strategies! How to make sure that skills stay in the community and don't leave with the project coordinator.

The challenge: How to measure success? Monitoring and evaluation activities are being done, but we must understand what it means in practice, not just theory. Still need to improve in this area. We have

to measure over a LONG time period. This doesn't fit into project time cycles. The projects themselves need to be constructed with a longer-term vision. The number of water tanks on an island is not a real test of effectiveness. Do locals know what to do when they are empty? What is the situation 2 years later – that is the real test!

Questions, discussion and comments followed the panel presentations.

- Is there any assessment made of materials made available for Small Islands? (contributed materials on water rules, brochure on seasonal forecasting, DVD on practical examples on coping with climate, etc.) Yes, the assessment of materials takes place, and the quality and availability depends on the organization.
- The creation of multidisciplinary university courses is very important, and we need more. Governments have been left behind in efforts to be more multi-sectoral. Ministries are more focused on specific issues, like water people dealing with water, transportation people with transportation, etc. There is not enough involvement from agencies and universities in building capacities.
- Interdisciplinary approaches to climate change are important, involving engineers in social science, etc. is very useful. At community level, a holistic approach is absolutely necessary. It is not only for environmentalists to handle climate change – must bring in economists, lawyers, city planners, etc., not only at local but also at international level. Capacity building and negotiation skills (in English!) are crucial.
- UNDP has developed a website with a wide range of material and there is a list serve for technical and relevant information, plus information on different adaptation funds.
- Share curricula and other resources freely online rather than keeping them all behind closed doors: this would help small states the most.
- UPEACE can make a case for cooperation. Do mapping to look at how different universities are looking at climate change, impacts, hotspots, etc.
- Regarding the proposed mapping exercise: the Commonwealth Secretariat just asked each region to put together their own paper on efforts to be made in Indian-Pacific region. The actual collaboration is in infancy; this mapping exercise is part of an ongoing effort.
- We develop capacities by doing, not by reading or being lectured at. Don't confuse material distribution with capacity. If we divert a lot of attention to establishing clearinghouses for information, we take our eyes off the ball. If materials are worthy of being exchanged and shared, they will be. If we spend a lot of time on

resource exchange, we will lose time where it is most needed: on the ground in a practical way. A lot of good people are taken out of practical roles and put into information distribution role, and it is a detriment.

- Agree that capacity building is doing things, not sitting in classrooms, but what people are doing, what is working and what is not, isn't being documented and distributed as case studies, and that is the best way to find out. The distribution of information is a very worthwhile activity.
- We need to look at ways to pull future cooperation and integration of efforts together.

Mr. Sarabhai summarized the good ideas: "We need to be more grounded in what we do. We need to give resources to the community. The university system does need to be involved in a way that builds on expertise rather than takes away from it, so that people with science and engineering expertise are working in the field. Several people mentioned putting climate change in larger context. I think the need for working together and developing capabilities is implicit."

5.4 Corporate Stewardship and Climate Change

How to engage the private sector? In this session, we learned about corporate initiatives and the features and benefits of corporate social responsibility. With audience participation, we also considered private sector incentives for addressing adaptation and sustainability.

Panel Chair: Mr. Marius Enthoven, Alliance for the University for Peace

Presenters:

Mr. Daan Dijk, Rabobank

Ms. Annemarie van der Rest, Shell Netherlands

Mr. Tom Vereijken, European Water Partnership (EWP)

Ms. Annemarie van der Rest represents Shell Netherlands on climate change. A chemical engineer, she worked in Shell's largest refinery, which gives her good background for her work. She spoke of future scenarios and the dilemmas we are facing in population growth, development, and energy demand.

Global population is expected to rise to 9 billion by 2050, mainly in the poorest and developing countries, which can be categorized as *poorest* (< \$ 1,500/year), *developing* (<\$ 5,000/year), *emerging* (<\$ 12,000/year), and *developed* (>\$ 12,000/year).

If the same ratio of poorest to richest people in the world continues, or if we as a world advance more economically, energy provision must match. If poor countries become *developing* or *developed*, the demand for energy changes drastically, with consumption tripling. To maintain or reduce CO₂ levels, we need a different energy structure.

Ms. Van der Rest summarized, "Shell is an energy company, and we know that there are limits. We want to be part of the solution." Today's energy infrastructure includes on-commercial fuels (i.e. wood), coal, gas, and oil. The energy challenge is how to change from CO₂ intensive to "green energy". Possibilities include carbon sequestration, advanced biofuels, and high efficiency vehicles. What Shell can see from the trajectories of population growth is that all forms of energy are needed.



Mr. Daan Dijk approached corporate stewardship from a banking perspective and observed that the present economic course is not sustainable. What has gone wrong? We have separated the economy from natural systems. Negative effects on the natural systems are not included in pricing or accounting. Why should a bank care? The business of core clients depends on natural resources. In fact, the whole world economy is dependent on natural resources. The solution is to transition to a new economic model: to make energy efficient choices and invest in sectors that create solutions. Rabobank is developing products for consumers and business to help solve the problem. An example is carbon neutral credit cards, which were developed with WWF. In addition, banks invest in energy efficiency and renewable energy. Consumers and governments have a role to play as well.

Mr. Tom Vereijken discussed the water sector in Europe and stated that business will be key in developing solutions to climate change. He explained that the water sector is very fragmented, and it is important to generate a comprehensive EU policy. Issues include:

- Water scarcity.
- Lack of public awareness.
- No comprehensive policy.

There are government programs and incentive packages, but subsidies alone will not solve the problem. Economic drivers help to stimulate stakeholders and the development of solutions. The business community is increasing investments in environmental technology. Business organizations with little understanding now want to find out what projects or technology or policy exists. The proper economic drivers will create sustainable behaviors. "We must include economics and the environment together in attempts to address climate change," Mr. Vereijken concluded.

Mr. Marius Enthoven then facilitated an interactive panel discussion. He began with a question, and then invited audience members to join the panel for further discussion.

How do Small Island developing states benefit from the availability of economic drivers from the private sector?

- The primary areas of interest are water shortages, disaster relief, and early warning systems. The bank is funding projects with the Red Cross to improve early warning systems and the coastal protection provided by mangrove forests. The bank is also offering insurance policies to small enterprise via the micro-finance programme. It is critical to understand the range of risks involved. Don't stop efforts to reduce carbon emissions.

What are the criteria for supporting local community projects by your foundations or through corporate social responsibility funds?

- EWP has tried to set up financial group to fund projects that are worth doing. For example, in Turkey, factories are producing leather using old-fashioned technologies that pollute the water, instead of new technologies which are much more efficient, but much more expensive. The absence of trust and specific risk assessment know-how makes such projects "a bit scary". There is no structural way of managing how money is invested in the projects.
- The own experience of Shell is that funding tends to be for "good neighbor projects" managed in cooperation with local organizations. For example, Shell had to build a large platform on a small island in the Philippines, and it built a small medical clinic that could be sustained after the construction crew left the area. They also supported education, fishponds, and chicken farms. The challenge was to manage expectations, with a transition period, so that after five years the communities were responsible on their own.
- Rabobank wants to stay with its core business. It helps people by giving financial-literacy advice, offering financial planning, helping local banks to modernize, and working with local cooperatives.

In 1974, GM purchased a patent on hydrogen engines, and then it wouldn't release it because it would "destroy the world economy". Explain.

- Technology is in constant progress. GM should have produced the car – holding back on innovation is a mistake.

How can small island states benefit from these economic drivers changing the energy pattern?

- Affordability: a high percentage of GDP is spent on oil and gas imports. Prices are coming down quickly in solar, wind, and

bioproduct energy. It's a business game. In some countries expense is an issue, but not in the developed world – they have the money, can pay for it, and should. What we can't afford is to continue polluting.

- Renewable energy can be better distributed and more democratic.
- Fuel should be cheap, clean, and convenient. Wind and solar are clean and convenient, but not yet cheap. So try to find ways to make it cheaper. Coal is cheap and convenient, but not clean. So try to find ways to make it cleaner.
- Instead of focusing on energy only, link energy with other sectors (like water or waste water) to develop a closed-loop system. Integrate energy with another facility so as to save energy or have energy-producing byproducts.

Small island states are not the cause of the rising sea levels that are wiping them out. Is it possible to come up with some kind of insurance for the risks to those states, and could the private sector take more of a role in supporting them?

- There is no mitigation policy or means of preventing their disappearance if the sea level rises a few meters. There is no way of insuring people for the sinking of their country. Banks could make money available for people to re-establish themselves at higher altitudes. Historical debts have been created in these situations.

When companies operate in various countries, how do they respond to the local laws if they are not in harmony with the company's own values and philosophy?

- Always comply with local legislation. Sometimes local is not as strict as own standards, in that case the company uses its own. It always follows whichever is stricter. It looks at local legislation and how it compares with minimum standards and international standards.

What if standards (e.g., European) are stricter than your own?

- Shell applies the same standards, regardless of geographic area. Legislation is absolute minimum. Far more important are company standards. There is no country where operations are legislated. Cannot work in an environmentally sound way without management systems.

If local standards were lower than company standards, would industry try to raise local standards in host countries?

- Yes, Shell does. It must always think long term and behave as a good neighbor: that means exchange information of best practices. In every country the company has good relations with

authorities because in the long run, it pays off. Always come into a dialogue with local communities and legislators.

- In the end, the bank's brand name is at stake. When the public finds out you've been polluting in other countries, you're in trouble. Advantages of short term shortcuts and profits are not worth it.
- Transparency plays a positive role here – don't forget the power of CNN!
- The EU has a directive (Euro law) to require cleanest available technologies (10 years). Companies now ask for the document. They are beginning to understand that if they make their practices known to people, it will be advantageous for them.

Would your companies or others be interested in offering scholarships to students from low-lying lands that are vulnerable in order for them to learn the most sustainable means of business practice so they can assist their own countries?

- We can't speak for our companies.
- Personally? Why not?

Iceland is moving to a hydrogen economy. Is that effort worthwhile for other small countries?

- Iceland has lots of volcanic heat available to drive turbines for electricity. But they lack carbon source. So they have no possibilities for carbon fuel. But they can split oxygen due to volcanic activity, thus have hydropower.
- Maybe island states have tidal energy that can be converted into electricity, so that is a possibility but obviously very particular to the specific island.

Climate change is mainly an energy problem, and the cost of energy does not reflect the full environmental costs. Isn't it strange that oil companies do not include these costs but do make huge profits?

- How would companies like Shell calculate these costs?

Adaptation costs have to be borne by countries, which did not generate climate change.

- It's a wider issue. It's not just a few companies that caused the problem. It's not just about selling the energy. We all caused the problem, each and every one of us. For this reason, we need to transform the whole economy. Consumers are either part of the solution or the problem – they can make a choice with every single purchase they make.

How do you reconcile your company's goal of profitability with the longer-term responsibility for sustainability?

- Shell is currently a fossil fuel energy company, and there is still a huge amount in the ground. We know it is finite, and we are developing alternative energy sources. They are not yet available at the right scale. In the meantime, we look at natural gas as a transition solution.
- Rabobank is moving toward clean technologies via "Energize"-profits shared 50/50.

Mr. Enthoven summarized: "We are here to discuss adaptation measures with the private sector, considering initiatives that could benefit the small island states; I hope that some links will be established as a result of this meeting. I think it is very hopeful that we can at least see that there are multinational corporations taking these sustainability issues into account."

5.5 Partnerships for Climate Leadership and Adaptation

In the final session of the conference, the participants organized themselves into three groups to outline plans for advancing climate adaptation through capacity building that includes higher education partnerships. The groups focused on policy level, technical level, and local level action. Each group then presented concrete steps for addressing climate change and vulnerability to the plenary.

5.5.1 Local Level Action

Facilitators:

Dr. Bill Aalbersberg, University of the South Pacific

Dr. Gillian Cambers, University of Puerto Rico Sea Grant College Program

Mr. Paul West, Commonwealth of Learning in Canada

To begin, **Mr. Paul West** took a few minutes to orient the participants to the accessible resources available through the Commonwealth of Learning Wiki website.



Dr. Bill Aalbersberg and **Dr. Gillian Cambers** then suggested that members of the group discuss recommendations in pairs. Categories of action steps are organized below.

- 1 Raise local awareness of climate change through partnerships among NGOs, governments, and the private sector. Foster village level meetings.
- 2 Develop small-scale funding for local community based projects. Work with partners, such as NGOs and the private sector. Canvas donors in The Netherlands and Belgium.
- 3 Work with large tourism companies to support local level ecotourism ventures.
- 4 Offer graduate study scholarships for students of low-lying developing countries (UPEACE and the University Consortium of Small Island States).
- 5 Increase Pacific Island participation in UNESCO-IHE post-graduate training.
- 6 Develop education resources. Work with primary and secondary school teachers and teacher training colleges. Create curriculum and share resources through Wiki website.
- 7 Develop own ethical and spiritual commitments. Change personal habits to act more responsibly in addressing climate change.
- 8 Establish partnerships between Earth Charter and Red Cross in Central America. Build youth awareness of climate change, global governance, and options for adaptation.

5.5.2 Technical Level Action

Facilitators:

Mr. Ton Bresser, UNESCO-IHE

Dr. Anja de Groene, Zeeland University

Dr. Anja de Groene and **Mr. Tom Bresser** opened their group discussion by brainstorming to consider ways to integrate climate change and sustainability into higher education. Three categories of options were proposed:

- 1 Undergraduate level coursework:
 - a Raise general awareness.
 - b Infuse climate-related topics into existing courses and programmes.

- 2 Graduate level coursework:
 - a Tailor short modular courses for professionals:
 - I Integrate resources from various disciplines for this programme.
 - II Engage policy makers.
 - III Build technical and negotiation capacities.
 - b Offer graduate degrees and certificates.
- 3 Outreach through climate change centers:
 - a Conduct research.
 - b Communicate to the public.
 - c Work with partner organizations.
 - d Advise policy makers.

5.5.3 Policy Level Action

Facilitators:

Mr. Fazal Ali, University Consortium of Small Island States (UCSIS)

Ms. Janet Strachan, Commonwealth Secretariat



Ms. Janet Strachan and **Mr. Fazal Ali** facilitated the discussion of capacity building for policy development and implementation. They considered ways to engage local and scientific communities. Four categories of recommendations were proposed:

- 1 Improve international access to models:
 - a Climate-relevant policies.
 - b Approaches to multi-sectoral mainstreaming.
- 2 Develop funding for capacity building:
 - a Examine the allocation of funds (UPEACE conduct research).
 - b Support partnerships and collective initiatives.
- 3 Provide training:
 - a In the development and implementation of policies and regulations.
 - b Through training institutes and universities.
 - c Including a variety of case studies.
 - d Using exemplary NGOs resources and materials.

- 4 Engage various stakeholders in policy development and review:
 - a Involve the private sector, including tourism industry.
 - b Incorporate private sector best practice (i.e. energy efficiency/systems).
 - c Develop modules for participatory involvement.
 - d Incorporate stakeholders as “drivers”!

5.6 Closing Remarks

Mr. Georges Tsai introduced Julia Marton-Lefèvre, the Director General of IUCN, the World Conservation Union, as a former Rector of the University for Peace, a respected colleague, and a treasured friend.



Ms. Julia Marton-Lefèvre recognized the positive spirit of the conference and the determination to move from commitment to action. The conference theme, “Global Challenge, Global Solidarity HIER”, has focused attention on the partnerships and the joint actions that are necessary. There is still time to avoid the worst impacts of climate change, she said, “If we take action now”.

“This group at this conference very nicely balanced from gender to age to nationality,” Ms. Marton-Lefèvre observed. She commended the participants for their active participation in sharing adaptation strategies from across the world.

Ms. Marton-Lefèvre cited recent climate-related studies, including the Stern report and the IPCC report, to demonstrate the economic costs of inaction and the risks to human survival on “this ill-treated planet”. The global impacts of climate change are severe, including water shortages, declining crop yields, loss of biodiversity, and a significant rise in the number of environmental refugees. Al Gore’s movie, “An Inconvenient Truth”, has helped to inform and mobilize the public. We have finally reached the tipping point, very recently. This conference is unique in comparison to those of the past, Ms. Marton-Lefèvre noted. It has approached climate change not just as a problem but also as a challenge, it has focused on solutions, solidarity, and specific actions taken by partner groups. A very interesting group came together to make this happen, including the Dutch Postcode Lottery supporting charities and NGOs addressing global

problems. Also HIER, an action-oriented partnership, the UNESCO-IHE team on water and climate, and the Commonwealth Secretariat came together to decide on action now!

The University for Peace (UPEACE) was highlighted as an institution with a unique niche: dedicated to teaching students to live harmoniously with each other and with nature. As former Rector of UPEACE, Ms. Marton-Lefèvre explained that the University realized some years ago that much of the world’s conflicts are caused by the struggle to control scarce natural resources. In fact, two Masters degree programs directly address this concern: the “Environmental Security Programme” and the “Natural Resource and Sustainable Development Programme”. Fellows and alumni of UPEACE are change agents working on similar agendas all over the world.

Ms. Marton-Lefèvre described the similar goals and commitments in her experiences with LEAD, UPEACE, and IUCN, the World Conservation Union, where she is now Director General. She expressed her hope that IUCN will engage in the follow-up to this conference: “This is not the last time we will be coming together to address these issues”. Team building and partnerships are essential. We need to break down the thick walls between areas of knowledge. “The challenges we face cannot be met alone.”

In closing, **Mr. Tsai** thanked the international participants for their active engagement and expressed special appreciation to the Board Members of the Alliance for the University for Peace and the Conference organizers: Mr. Tom Deligiannis, Mr. Ron Kingham, Dr. Mary Jo Larson, Ms. Petra van der Ham, and Mr. Henk van Schaik. He also recognized and thanked the Dutch sponsors, particularly the National Postcode Lottery, Dutch Ministry of Foreign Affairs, Netherlands Ministry of Environment, Commonwealth Secretariat, HIER, and UNESCO’s Co-operative Programme on Water and Climate.

Mr. Tsai acknowledged that he is not an expert on climate change. The discussions with the Small Island and Dutch leaders have helped him understand climate risks and how they weigh most heavily on those who are least responsible and least able to adapt. Recognizing the importance of climate solidarity and the significant capacity building role of higher education, the University for Peace is fully committed to working with other Conference partners to address the environmental and social vulnerabilities associated with climate change.

Mr. Tsai then invited **Professor Bastiaan Zoeteman** to propose the Chairman’s Conclusions for the Climate Change and Vulnerability Conference.

6 CHAIRMAN'S CONCLUSIONS

Professor Zoeteman concluded the conference:

- 1 Climate change is unavoidable. The need for adaptation actions is urgent. This does however not exempt those responsible for greenhouse gas emissions to do all that is technically possible to reduce emissions and to increase sinks for CO₂, including stopping the destruction of the Amazon tropical rain forest and stopping the



systematic burning of forests in e.g. Indonesia for farming.

- 2 The first victims of sea level rise are low lying coastal regions and islands, such as Tuvalu, Kiribati and Fiji. Small island states in the Caribbean and the Pacific region have organized themselves in the Association Of Small Island States (AOSIS) to better represent their interests in international negotiations and to better organize self reliance. AOSIS includes 43 states and 10 million people. Unmitigated sea level rise is an indirect way of "environmental warfare" leading ultimately to the destruction and possible displacement of nations as a result of the emission of large amounts of greenhouse gas emissions by other nations. The international community is to some extent ignoring this issue and has not yet fully recognized the rights of low island states to continue to exist or to be compensated for their loss of territory due to sea level rise and avoidance of relocation.
- 3 Sea level rise will lead to individual "environmental refugees" which can be absorbed by other territories of a nation or by neighboring countries. However, for the disappearance of small island nations, acceptance of individual refugees does not solve the loss of sovereignty over territory. Political aspects of eventual relocation should be investigated and options to cope with this problem should be soon developed. Rights of small islands states to prevent the need of relocation should be given similar weight as e.g. rights of farmers to be subsidized for their work or the rights of nations to be compensated for rapid phasing out CFC releases to the atmosphere.
- 4 The increasing pace of the threat of storm damage and inundation of island states is often not recognized by the population of small island states due to a variety of reasons. The conference has shown however that raising awareness is possible as demonstrated by many initiatives such as the Dutch HIER campaign and that adaptation to a sea level rise of, on the long run, several meters is technically possible. Strategies can include:
 - a sand suppletion to maintain beaches
 - b creation of higher land with waste materials, sand from abroad etc.
 - c sea walls and reinforced coastline constructions
 - d construction of floating devices and installations for housing, for renewable power generation, desalinization of water, or growing plants etc.
 - e creation of off shore new islands, etc.
- 5 Although long term defense of land against flooding due to climate change will remain affordable for a country like The Netherlands (costs are estimated to be 0.1-0.2 % of GDP) it may not be affordable for small island states as relative cost may be much higher. Lack of perspective may result in brain drain to safer regions. Adequate financial support to mitigate such developments, e.g. through the GEF, is lacking but needed and justified. Now that the cause of climate change has been scientifically established by the IPCC, the rights of small islands states to receive adaptation support (including financial) is evident. This should become part of the post Kyoto regime to cope with climate change. Ways to insure the special risks of low coastal regions should also be developed further, including the possibilities of direct contributions from the business community.
- 6 The need to mitigate the causes and to adapt to the consequences of climate change have for a long time been denied and doubted by deliberately providing disinformation by certain groups in order to delay action. The result has been despair among NGOs and the public, and distrust in the effectiveness of national authorities to deal with climate change. Those who did not give up have however succeeded in reactivating the public agenda for climate change mitigation and for effective adaptation actions. The generation of creative ideas, improved international cooperation of NGOs and universities add to the growing capacity to deal with the issue.
- 7 In many of the low lying island states technical and governance capacity can be further improved, recognizing at the same time that these communities have shown great resilience under difficult conditions. Educational training programs of international NGOs, like WWF and the Red Cross, UNESCO and UNDP, as well as universities play a crucial role in capacity building in these communities, particularly if this training is targeted towards those working on the ground on adaptation projects, and towards integrating adaptation capacities to various professional sectors. Capacity building should be country and environment specific. The conference identified and initiated opportunities for better collaboration between universities in the English and Spanish speaking small island nations.

6 CHAIRMAN'S CONCLUSIONS

- 8 The conference stressed the need to better integrate the issue of climate change into international development cooperation programs and local development priorities.
- 9 Networks of collaborating universities already exist, such as the university consortia of small island states, with its secretariat at the University of the West Indies, coordinating the collaboration of universities working in the Pacific, Caribbean, and South Asia. UPEACE may contribute to facilitating further forms of collaboration with university networks in the North and by providing capacity building in the fields of conflict prevention and resolution.
- 10 Other ways UPEACE may contribute to improving the collaboration within university networks is by providing updates on multidisciplinary skill development, exchange of visiting professors, coordinating curriculum development efforts, and assisting in the distribution of best practices and skills development material to partner institutions.



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A handwritten signature in black ink, appearing to read "D.M. Sliker".

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Please visit our conference website for updates, as well as the program book, texts of speeches and the video report

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