

Oceanic Waves



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SPREP hosts the Pacific Climate Change Roundtable Conference

The Pacific Climate Change Roundtable, which took place from 13-17 October 2008, in Apia, Samoa, was organized by the Secretariat of the Pacific Regional Environment Programme (SPREP).

Participants from all over the Pacific region, from academia, NGOs, donor agencies and countries, shared information on ongoing and planned climate change activities in the region. They prepared an inventory of activities that will eventually become a matrix and database of activities for the Pacific Climate Change Portal, to be developed in partnership with National Oceanic and Atmospheric Administration (NOAA), South Pacific Regional Environment Programme (SPREP), Australia and New Zealand. Participants also agreed on a set of next steps, including on communications and strategizing for the Poznan Climate Change Conference in December 2008

A Lecturer of the University of the South Pacific (USP) Alafua Campus, Samoa, Mr David Hunter was among the participants. He delivered a key note paper on behalf of Professor Patrick Nunn of USP



PCCRC participants gathered in Apia, Samoa to discuss Climate Change issues and action plans for the region. (Photo source: SPREP)

"The presentation summarized some key points concerning climate change in our part of the world and suggest new ways forward for coping with the challenges," said Director of Office of Research and Graduate Affairs, Professor Patrick Nunn.

Professor Nunn argued that islands in the Pacific have no choice but to consider relocation as one way of adapting to climate change.

"No-one wants to be told that the place where they live, where their ancestors

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Pacific Leaders agrees to EU to provide technical experts for the Pacific to fight climate change in the UNFCCC meeting

The Pacific Islands Forum Leaders have signed a declaration with the European Union (EU) during the Conferences of Parties, 14th Session (COP14), and Conferences of Parties serving as the meeting of Parties to the Kyoto Protocol (CMP) that was held in Poznan, Poland from the 1-12 December 2008. The Declaration will see that technical experts from the EU will help the Pacific address climate change priorities on mitigation and adaptation.

Marco Morettini, the European Commission's Director General of Development and Relations with African, Caribbean and Pacific States confirmed this with the Pacific Communications team at the global climate change summit in Poland.



Flooding is more like an annual event in Nadi, Fiji. This is the water level during the flash flood in 2006. (Photo source: P. Nunn)

With the Polish conference now regarded as a disappointment, the Pacific island leaders are now locked into the declaration even though the EU is refusing to further a commitment to reduce greenhouse gas

emission by 20 percent in 2020 from 1990 levels. The Pacific Island countries are members of the Alliance of Small Island States (AOSIS), who want at least a 40 percent reduction in greenhouse emissions.

Morettini says the declaration, signed last month by Forum chair and Niue premier, Toke Talagi, is a political

document of commitment, but technical experts from the EU and the region will meet in the first quarter of next year to design concrete work plans.

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START is the acronym for Global Change SysTem for Analysis Research and Training. It was launched by international scientists to build indigenous capacity world-wide to cope with scientific and policy aspects of environment change and development. The International START Secretariat was established in Washington DC, in 1992. START website address is: www.start.org



START-Oceania is one of six START regional networks. START is sponsored by the International Geosphere-Biosphere Programme (IGBP), International Human Dimensions Programme on Global Environmental Change (IHDP) and World Climate Change Research Programme (WCRP). START-Oceania website is

From the Secretariat desk

The year 2008 has been a challenging year for the secretariat as the founding Director, for STARTOceania, Dr Kanayathu Koshy moved to New York to be closer to family, PACE's Fellow, Mr Melchior Matakai, also a great contributor to the growth of START Oceania left for further studies in Australia and Mr Rodney Lui, a committed support staff for both PACE and START Oceania moved on to new challenges in his professional career.

One major activity that was held in October 2008 was the Pacific Climate Change Roundtable Conference (PCCRC) that was held in Samoa. Details of the event are highlighted in Page 1. Another event that was held at the same period of the PCCRC, the Pacific Media Climate Change Training Workshop is on Page 2.

The COP 14, CMP UNFCCC meeting was held in December and the Pacific Communication team was there to report on the event (Page 1).

SOPAC organised the Launching of the Pacific Web-Portal in Suva, Fiji covered on Page 2, PACE's ESD

Officer visited IPs project sites in Malaysia and Indonesia is featured on Page 3.

Page 4 highlights the Young Scientist Column that features Ms Reena Prakash. She is a Master of Science student at USP. Her research is based on Marine Green Algae.

Page 5 includes International/Regional announcements on meetings on Climate Change related issues.

Page 6 features the IUCN Conservation Congress. Three Pacific youth that attended the PFLEF attended the IUNC CC to share vision statements that 40 Pacific youth have put together. This page also includes the World Cleanup activities in the Cook Islands. Suva City Council in collaboration with USP's Pacific Centre for Environment & Sustainable Development (PACE-SD) on a Pilot Composting of Organic Waste in the Suva market project is covered on Page 7.

Fiji's DoE with the kind support of Westpac Fiji Banking Corporation led a "Plastic Free Campaign" for Christmas shopping in Fiji is highlighted in Page 8.



Editorial Assistant: Daiana Taoba

Masthead design: Joe Uluinaceva

Template design: Mosmi Bhim

Contacts:

Dr Anjeela Jokhan
Acting Director

Pacific Centre for Environment & Sustainable Development

Ph: (679) 3232567.

Fax: (679) 3231514

Email: jokhan_ad@usp.ac.fj
Fine Lao

Fellow - Climate Change & ESD
Pacific Centre for Environment & Sustainable Development (PACE-SD)
Email: lao_f@usp.ac.fj

Ph: (679) 3232895

Fax: (679) 3232891

Postal: START Oceania, c/- PACE-SD, Lower Campus, University of the South Pacific, Suva, Fiji

Email: startoceania@usp.ac.fj

Website: www.usp.ac.fj/start

SPREP hosts Pacific Climate Change Roundtable Conference

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lived, is not going to be habitable in the future," said Professor Nunn. "But there is no way to sugar-coat this message. There are parts of our Pacific world, just as there are parts of every other part of the Earth that will not be habitable 20 years from now because of sea-level rise."

It is envisaged that the Roundtable will meet once a year, but that smaller thematic meetings may be held as well, making full use of internet and e-mail for communication. In addition, the Roundtable launched the 2009 Pacific Year of Climate Change, as agreed to by the 19th SPREP meeting in Pohnpei, Federated States of Micronesia.

This will provide yearly opportunities to prioritise those areas where little progress has been made and to establish which key

principles may have been met. Some principles may have to be revisited in future years.

The PCCRC participants also discussed climate change activities to be considered for 2009 Pacific Year of Climate Change.

The Pacific Island Leaders adopted the Pacific Islands Framework for Action on Climate Change (PIFACC) 2006-2015 in 2005 and SPREP was directed to develop an Action Plan to implement PIFACC, by establishing a set of national and regional activities that would meet the key principles of PIFACC. The PCCR will have a monitoring and evaluation functions, amongst its other tasks, and will therefore allow Pacific Island Countries to gauge the degree to which national and regional actions have met those key principles.

Pacific Web-based Portal for Disaster Risk Management

Disaster Management specialist from the region met on the 18th September, 2008 at the Suva Holiday Inn, Fiji for the official launch of a new tool that could

United Nations Office for the Coordination of Humanitarian Affairs. These agencies are part of the larger Pacific Partnership Network Initiative



Specialist from within the region in the field of disaster management observing the Pacific Disaster Net (www.pacificdisaster.net) during its launching in Suva, Fiji on the 18th September, 2008. (Photo source: SOPAC)

revolutionise disaster management though out the Pacific.

The Pacific Disaster Net (www.pacificdisaster.net) is a web based portal that will help to link management specialist and resources through out the Pacific region. It will directly help National Disaster Management Offices and all disaster risk management stakeholders to improve knowledge management, planning and decision-making.

The portal is being developed by a partnership between Pacific Island Applied Geoscience Commission (SOPAC), the International Federation of the Red Crescent Societies, the United Nations Development Programme and the

assisting Pacific Island Countries to develop and implement National Action Plans for Disaster Risk Reduction and Disaster Management.

It is a living collection and made available through the internet and alternative media and relating to governance, risk assessment, early warning and monitoring, risk reduction measures, disaster management, training and tools. The information is in range of formats including reports, data inventories, maps, contacts, web links, and more. The portal aims to provide different but simple and intuitive ways to search for relevant information.

To find out more about the portal, contact Ms Jutta May on email: jutta@sopac.org

Pacific media form resolution on climate change reporting

A network of Pacific reporters interested in environmental news, a resolution and a stronger understanding of climate change issues were just a few of the outcomes of a Pacific Media Climate Change Training Workshop held in Apia, Samoa.

The workshop was staged parallel to the 2008 Pacific Climate Change Roundtable (PCCRC). The purpose of the workshop was to provide high-level training to Pacific media delegates on climate change and related issues. By integrating the Training Workshop with the PCCRC, the media were able to put their growing knowledge to immediate and intensive use by filing multiple daily reports on the PCCRC deliberations.

The Workshop is a partnership between

>> continued on page 8

ESD Team visits the two IPs project sites in Malaysia and Indonesia to evaluate and monitor the activities

Experts in the Education and Sustainable Development (ESD) within the Asia-Pacific region visited project sites in the Asian countries to evaluate the current Innovation Programmes (IPs) for ESD. This mission titled "Joint Evaluation Mission of the ACCU-UNESCO Asia-Pacific ESD programme in Indonesia and Malaysia" was held from the 14 – 30 September, 2008. The ESD Expert Team spent a week in Indonesia and the following week in Malaysia. The main objective of the mission was to evaluate the current Innovation Programme (IPs) for ESD in the two countries using the HOPE approach.

The mission was a follow up to the workshop that was conducted in June, 2008. The ESD visiting team included representatives from the University of the South Pacific, Thailand, Australia and an ACCU-UNESCO representative. The Project officer for ESD of the Pacific Centre for Environment and Sustainable Development (PACE), Mrs. Aliti Koroi was among the experts as a representative from USP.

Following are the activities that were carried out in the two IPs project sites and were being evaluated by the ESD Team:

(i) Indonesia – Capacity Building of Community-Based Disaster Risk Assessment & Mitigation on West Java Volcano Hazard
The objectives of the project are to reduce people's vulnerability by increasing their capacities to prepare for; to cope with and to mitigate the adverse effects of volcanic disasters, empower communities to participate in self help initiatives and establish and maintain coordination and links between the communities and all relevant stakeholders.

Generally, West Java Province in Malaysia is gifted with fertile land, yet it is also sensitive to changes. With volcanoes around the area, West Java Province is vulnerable to both tectonic and volcanic activities, not to mention eruption. Of the many volcanoes present within the project site area, seven are classified as Class A- Active Volcanoes.

"To decrease the impacts from volcanic disasters with the objective of increasing awareness and response capacity to these disasters, and reduced effects of these disasters on the most vulnerable people at the communities living in high disaster prone areas, a number of educational and training activities were conducted because one of the responsibilities to the next generation concerning environmental conservation is giving perceptions and understanding for the young generation," said Mrs. Aliti Koroi

"People living in such areas are often alone in coping with the effects of the disasters. They cannot depend on outside assistance or a benevolent state to take responsibility for their well-being. Therefore the best option is for them to become more aware of their own potential in changing recurring disasters into manageable hazards," further stated Mrs. Aliti Koroi.

From the evaluation exercise the ESD experts were able to talk to the participants of the



Mrs Aliti Koroi(Right), PACE's ESD Project Officer with the ESD team sitting with the villagers of Simajaya, Indonesia. (Photo source: A.Koroi)

project and were informed that they had been given a series of educational trainings by the implementing agency and volunteers that had been included to increase their awareness and response capacity to volcano disaster preparedness. The villagers were now more aware of signs that there were activities taking place around their area that needed much attention and preparation.

"For instance, the villagers shared with us that prior to the last major activity from Mt. Papandayan (Volcano) in 2002 they noticed that there weren't much visitation to their farms/gardens by wild pigs and birds. These are some clues for the villagers that something major is going to happen that they knew nothing of prior to the trainings."

"The villagers are also now aware of safe hideouts should there be an eruption – mapping of safe areas were also part of their training. The villagers have also engaged in other environmental activities for the betterment of their communities – for instance, they have engaged in re-afforestation projects and are also looking into some water projects to counter their water shortage problems" said Mrs Koroi

(ii) Malaysia – Moyog Family Literacy Project

This project seeks to elevate the literacy capacity of rural families so that they will be more empowered to make documentations of aspects pertinent to a sustainable future, such as the documentation of culture and indigenous knowledge of forest conservation and sustainable use of forest resources. Seminars and workshops were conducted to teach

families how to read and write and to assist parents with writing down their stories into story books.

The Moyog Family Literacy project was conducted in the village of Togudon in the Penampang district. Togudon is located on the hillside and a major highway connecting Penampang to the interior regions of Sabah. There are more than 30 families that reside in Togudon village. The community belongs to the larger Kadazandusun community which is the largest indigenous group in Sabah, Malaysia.

The families in Togudon village are mostly farmers by occupation and perform small-scale farming to provide extra income for their families. Community cooperation is the cultural spirit of "mogitaatabang" (working together) helps the community meet their needs.

The project participants are made up primarily of adults or the parents in the family. In the first phase of the project, project implementers – the Kadazandusun Language Foundation (KLF) taught participants to understand the linguistics aspects of the Kadazandusun language. This component addressed participants' skills in mainly reading and writing. In the second phase, KLF took participants through the publishing stages through to the printing of their respective story books. The participants were taken through the editing and publication processes which entailed the creation of illustrations, book covers among others.

"The projects focused primarily on improving the literacy in Togudon Village and at the same time helped families find a way to instill good and cultural values in their children. This was done by assisting families produce stories that contained knowledge and values on forest conservation and sustainable use of

natural resources,"

"Not explicitly addressed is the focus on economy. However, it must be noted that when discussing the importance of literacy with project participants, they often refer to the betterment of the economy, i.e. when one has the skills to read and write and do simple calculations, one is better equipped to negotiate with others in the marketplace. For example, villagers from Togudon are now able to sell their farm produce to suppliers at a fair market price – they are able to count and estimate the actual worth of their produce against supplier prices," said Mrs Koroi

The HOPE (Holistic, Participatory, and Empowering) evaluation methodology values dialogue and thick descriptions of the narrative; focuses on the process of implementing the project and it allows formative feedbacks to the project stakeholders.

For more information please contact Mrs. Aliti Koroi on email: koroi_al@usp.ac.fj

HOPE evaluation approach

The following four pillars have been extracted from the key characteristics of ESD pointed out in the International Implementation Scheme of the United Nation Decade of ESD, as the focused dimension of ESD for the HOPE Evaluation approach.

HOLISTIC:

*Address the realms of sustainability (environment, society, economy and culture)

*Employ Interdisciplinary perspectives

*Link Local priorities with global issues

PARTICIPATORY:

*Use variety of pedagogical techniques promoting participatory learning

*Employ participatory approaches in the process of development

EMPOWERING:

*Capacity development for decision-making, social tolerance, environmental

*Stewardship, adaptable workforce and quality of life both at the individual and collective levels

CONTEXTUAL:

*Locally relevant

*daptable to dynamic global context

*Culturally appropriate

*Flexible

Among various types of indicators, The HOPE Evaluation approach shows particular interests in those identifying "Process", "Learning", "Output", "Outcome" and "Impact/Contribution". In the conduct of the on-site HOPE evaluation survey, three indicators, i.e. "Process", "Learning" and "Outcome" are more prioritized. For more information please contact Mrs Aliti Koroi on email: koroi_al@usp.ac.fj

Marine green algae as possible bioindicators for coastal areas

This article was compiled by Ms Reena Prakash. It is a brief summary of her thesis. She is a Master of Science student at the University of the South Pacific.

There is much interest in the excessive growth of green macroalgae of *Enteromorpha* genus (also known as *Ulva* genus) in the intertidal marine and estuarine areas. *Enteromorpha* are filamentous green algae that belong to the phylum Chlorophyta and class Ulvophyceae. It is referred to as fouling algae as they develop abundantly on coastal zones affected by pollution from municipal or industrial discharge. Blooms of these algae occur naturally and have increased in their occurrences in many areas of the world. *Enteromorpha flexuosa* and *Enteromorpha intestinalis* are two species commonly found along the coastal areas adjacent to settlements and estuaries in Fiji.

The variations in abiotic conditions of the aquatic environment such as changes in temperature, salinity, pH and nutrient availability limits the abundance and distribution of algae. Algae are rapid responders to water quality changes hence considerable information concerning the environmental health of an aquatic habitat can be obtained from their physiological studies.

The effects of changes of temperature, pH, nitrogen level and presence of herbicide Diuron on the physiology (is the study of the mechanical, physical, and biochemical functions of living organisms) of *E. flexuosa* and *E. intestinalis* were investigated over a period of 18 months from April, 2005 to September, 2006. The algae were collected from Nasese area, in Suva, Fiji Islands and cultured in artificial seawater medium (ASM) under laboratory conditions and exposed to variable temperature, pH, nitrogen content (ammonium and nitrate) and herbicide Diuron 80. Growth rate, photosynthesis rate and biochemical composition (total chlorophyll content, total soluble proteins and total soluble carbohydrates) of the algae was determined in relation to variable temperature (20 – 35 degrees Celsius), pH (4 – 10), nitrogen content (ammonium 0 – 2.5 micromoles/ L and nitrate 0 – 7.0 micromoles/ L) and herbicide Diuron 80 (0- 1 mg/ L) levels. For growth experiments, algal propagules were collected on rough surfaced tiles and germinated in ASM with altered conditions, and their growth rates were measured. For photosynthetic rate, total chlorophyll, total soluble proteins and carbohydrates determination, adult algae were collected and cultured in ASM with altered conditions. Similar physiological studies were done on *E. flexuosa* and *E. intestinalis* collected from Nasese, Lami and Laucala Beach area around Suva, Fiji Islands.



Ms Reena Prakash collecting samples of green algae along the Nasese area, Suva, Fiji. (Photo source: R.Prakash)

The results obtained from the research showed that the algae were affected by variations in their abiotic environment. The growth rates, photosynthetic rates, total chlorophyll, total soluble proteins and total soluble carbohydrates of the algae decreased as the temperature and Diuron 80 levels increased in the ASM. The algae appeared bleached at high temperature and high Diuron 80 levels. Increase in pH and nitrogen (ammonium

experiments indicate that *Enteromorpha* are quite sensitive to temperature and herbicides. High temperature decreases algal photosynthesis, increases respiration which depletes the stored carbohydrates and denatures the enzymes and proteins that take part in various metabolic reactions of the algae. Herbicide primarily inhibits photosynthesis resulting in the destruction of chlorophyll in the algae similar to its action in plants.



Green algae cultured in artificial seawater medium (ASM) at the USP Laboratory and are monitored for over a period of 18 months.(Photo source: R. Prakash)

and nitrate) levels in the medium on the other hand advanced algal growth and survival. Growth, photosynthesis, total chlorophyll, total soluble proteins and carbohydrates increased as pH increased from pH 7- 9 while it decreased from pH 6 – 4. The increase in ammonium and nitrate levels caused an increase in growth, photosynthesis and biochemical composition. The decrease in ammonium and nitrate levels independently did not have a significant effect on the algal growth and physiology.

The findings from the laboratory

However, *Enteromorpha* are more tolerant to the changes in pH and nitrogen levels. High pH favors their growth and survival because at high pH inorganic carbon (HCO_3^-) is dominant. Inorganic carbon is the major source of carbon for photosynthesis in algae species, for this reason photosynthesis, growth, and biochemical composition were high in algae at high pH. Apart from inorganic carbon, pH changes in the environment affects photosynthesis, membrane transport processes, biochemical composition, enzyme activity together

with protein and carbohydrates which in turn affect the growth and survival of *Enteromorpha*.

The research shows that the algae are excellent bio-indicators (are species used to monitor the health of an environment or ecosystem) for high nitrogen levels (especially ammonium) as their presence in the intertidal zones in high amount indicates high nitrogen levels. Analysis of algae collected from the Nasese, Lami and Laucala Beach area showed most favorable growth of *Enteromorpha* in Laucala Beach area. Algae collected from Laucala Beach area had more healthy fronds(leaf-like structure of the algae) plus high photosynthetic and biochemical content than Nasese and Lami. The credit for more favorable growth of algae in Laucala Beach area could be given to the nitrogen content that resulted from the nearby sewage treatment plant. Ammonium and nitrate analysis of water from the three sites showed that Laucala Beach area had the highest amount of ammonium and nitrate levels when compared to the other two sites. Algae from Lami area had low photosynthetic and biochemical composition. During most occasion of sample collection, this site was without *Enteromorpha* growth. Low growth of algae in the Lami area could have been due to several possible reasons. Some of which include; low nutrient levels, thermal pollution that could have resulted from factory effluents since the area is an industrial one, industrial chemicals such as Polychlorinated biphenyls (PCBs) and antifouling compounds such as triphenyltin (TPT) and tributyltin (TBT) from nearby harbor that cause damage to the photosynthetic apparatus of the algae. Nasese area also had significant amount of pollution resulting from sewage discharge, runoff from drainage outfalls, soap and detergent contaminated water from household drainage. Yet algae in this area appeared healthy. Significant growth in this area could be due to increase in alkalinity that resulted from household drainage. The laboratory experiments showed high growth and biochemical composition at high pH levels.

The research overall illustrated that photosynthetic rates and biochemical contents give a clear account of the changes in the functional physiology brought by the stress created via variations in abiotic environment. *Enteromorpha* can be used as a bio-indicator of marine pollution in Fiji with respect to nitrogen content in the aquatic environment especially for high ammonium levels. The research also showed that the *Enteromorpha* has a wide tolerance range for pH and temperature and that is why it is able to flourish and cause 'blooms' in moderately polluted waters

For more information please contact Ms Reema Prakash on email: reemaprak@gmail.com

Climate Change Congress as follow up to COP 15

As a run-up to the Governmental Climate Conference in Copenhagen (COP 15), the University of Copenhagen organises a scientific Climate Congress about climate change from 10-12 March 2009. The congress will be held at the Bella Center in Copenhagen, Denmark

The conference is entitled: Climate Change: Global Risks, Challenges and Decisions and is organised by The University of Copenhagen in Cooperation with 9 other universities in the International Alliance of Research Universities (IARU). These Universities includes Australian National University, ETH Zurich, National University of Singapore, Peking University, University of California, Berkeley, University of Cambridge, University of Copenhagen, University of Oxford, University of Tokyo and Yale University

The main aim of the congress is to provide a synthesis of existing and emerging

scientific knowledge necessary in order to make intelligent societal decisions concerning application of mitigation and adaptation strategies in response to climate change.

After the congress a summary will be published with the main findings of the congress a supplement to the results of the Intergovernmental Panel on Climate Change (IPCC).

According to the preliminary program the conference will face six themes:

- 1) Exploring the Risks: Understanding Climate Change.
- 2) Sharing the Burdens and Opportunities: Equity Issues
- 3) Reducing the Risks of Climate Change: Opportunities of Mitigation
- 4) Preparing for Impacts: Adapting to the Inevitable
- 5) Managing the Planet
- 6) Mobilising the Populace: Human Dimensions of Climate Change.

Among the keynote speakers are:

Lord Nicholas Stern. Chairman of the new Grantham Research Institute on Climate Change and the Environment
Dr. Rajendra Pachauri, chairman of the IPCC

Mr. José Manuel Barroso, President of the European Commission

Mrs. Connie Hedegaard, Danish minister of Climate and Energy

Mr. Anders Fogh Rasmussen, Prime Minister in Denmark

The Danish Government as host of the UN Conference on Climate Change (COP15) to be held in Copenhagen at the end of 2009 supports this Congress organized by IARU.

The COP 15 of the UN Conference on climate change will be held in Denmark from November - December 2009.

For more information please visit the website: <http://climatecongress.ku.dk/>

IHDW Trains Young and Mid-Career Researchers

More than 70 scholars from around the world met in New Delhi from 11-16 October, 2008, to participate in the new edition of the International Human Dimensions Workshop (IHDW). The workshop was aimed at training the future generations of human dimensions researchers, the IHDW is a capacity development activity that takes place every two years and is planned and carried out by the International Human Dimension Programme on Global Environmental Change (IHDP).

The training workshops offered a unique opportunity for the promotion of young and mid-career scientists from all regions of the world, particularly those from countries developing and emerging economies. This was made possible thanks to the contributions of the following sponsors: the Asia Pacific Network for Global Change Research (APN), the System for Analysis Research and Training (START), the Inter-American Institute for Global Change Research (IAI), Jawaharlal University (JNU), the Institute of Economic Growth (IEG), the United Nations Delhi - India, NeWater, Universität Osnabrück, Wageningen University, the Global Water Systems Project, the IHDP Chinese National Committee, the Economic & Social Research Council (ESRC), the UN-Water Decade Programme for Capacity Development (UNW-DPC), and gcPLUS.

For more information please visit the website: <http://www.ihdp.unu.edu/file/IHDW+Update+2008+Extra+IHDW:menu=53>

Asia Pacific Climate Risk and Adaptation Conference

The Chinese Academy of Science (CAS) will hold an international and interdisciplinary conference to gather the world's most knowledgeable experts to brief policy stakeholders in Asia Pacific countries on how to apply risk management and adaptation to climate change. Considerable analysis has been conducted on how to reduce greenhouse gas emissions; much less attention has been given to helping regions become more resilient to climate hazards through adaptation. It is time to put the spotlight on the urgency of reducing climate-hazard vulnerabilities through adaptation. While many solutions to climate change problems take long periods of time to work, many of the Asia Pacific region's problems need to be addressed now. The Asia Pacific

Climate Risk and Adaptation Conference, to be held between May 26 and 29 in Beijing, China, intends to explore these questions. The conference will bring together people with different minds, experiences, and perspectives to exchange ideas and brainstorm solutions. Potential participants include Asia Pacific public and private sector stakeholders in hydrology, water management, agriculture, natural resources management, economic development, coastal zone management, public health, meteorology, climatology, finance, and insurance. Website: <http://asiapacificclimate.org/> E-mail: [Conference-Co-chair Paul Chan chanp@imsg.com](mailto:Conference-Co-chair-Paul-Chan-chanp@imsg.com) or [Vance Horn humv@imsg.com](mailto:Vance-Horn-humv@imsg.com)

Tahiti hosts Pacific Science Intercongress

France, French Polynesia and the Pacific Science Association are pleased to organize the 11th Pacific Science Intercongress in conjunction with the 2nd Symposium on French Research in the Pacific, on the theme: "Pacific Countries and their ocean facing local and global change". Pacific countries will be the most affected by the events of climate change and globalisation. The general Inter-Congress is highly relevant for French Polynesia, its Pacific neighbours states and the region as a whole. Assessing, predicting and developing strategies for dealing with such change is critical to the environment, economic and cultural sustainability of our region. Please visit website: <http://www.psi2009.pf/>

Pacific Leaders agrees to EU to provide technical experts for the Pacific to fight climate change in the UNFCCC meeting held in Poznan, Poland

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The regional organisations of the Secretariat of the Pacific Community (SPREP) and Secretariat of the Pacific Geoscience Commission (SOPAC) will send technical experts from the region for the discussion.

The agreement, on its own, will also provide new and additional resources for the implementation of the Pacific Islands Framework for Action on Climate Change (PIFACC) and other relevant programmes in the Pacific region. EU has signed a similar declaration with the African countries.

"The documents are structured with different contents and goals in line with negotiations under the convention (United Nations Framework Convention on Climate Change), at the same time increase operational activities that are still

being spelled along a set of priorities that are being defined and described by the Pacific countries themselves," Morettini said.

"So if we look at the next concrete step we have envisaged, there will be in principle a technical working group that is to meet at technical levels and we are considering this body to meet in the first quarter of 2009. They will discuss, of course, with the regional institutions existing in the Pacific, the priorities that have been identified so to be able to craft some concrete operational activities at the regional level for Pacific Islands."

Morettini says that the declaration with Pacific island leaders will be complemented by the EU initiative of the Global Climate Change Alliance (GCCA). The Alliance is a mechanism for improving political dialogue and

promoting the exchange of experiences between the EU and developing countries that are most vulnerable to climate change, such as Least Developed Countries (LDCs) and small island developing states (SIDS).

The results of the Alliance will contribute to the discussions on a robust and comprehensive post-2012 agreement on climate change under the auspices of the UNFCCC.

This article was extracted from a report that was compiled by the Pacific Communication team that attended the COP 14 meeting. The team is an initiative of the Secretariat of the Pacific Regional Environment Programme (SPREP), with financial support provided by the Government of Canada.

Communication team members include: Lance Laark, Editor and

Publications Officer, SPREP

Email: lancel@sprep.org

Nanette Woonton, Associate Publications and Media Officer, SPREP

Email: nanette@sprep.org

Cherelle Jackson, Talamua Media

Email: samoanwriter@yahoo.com

Makereta Komai, PACNEWS

Email: makeretekomai@yahoo.com.au

Ulamila Kurai Wragg, Managing Editor, Pacific Magazine. Email: wragg@oyster.net.kc

These media reporters were participants of the Pacific Media Climate Change Training Workshop held in Apia, Samoa on the 14 October, 2008. The workshop was to provide high level training to Pacific media delegates on climate change issues. For more information please visit the website: www.sprep.org

Future Pacific Leaders shares vision at the IUCN CC in Barcelona

The International Union for Conservation of Nature (IUCN) Conservation Congress was held in Barcelona, Spain from the 5-14 October 2008. The congress brought together more than 8000 of the world's leading decision makers in sustainable development from governments, NGOs, business, the UN and academia to debate, share, network, learn, commit, vote and decide.

The overall objective of the congress was to share ideas, actions and solutions for a diverse and sustainable world.

As a follow up to the 2004 IUCN World Conservation Congress resolution to Capacity Building for Young Professionals, the future leaders were also given the opportunity in the 2009 IUCN Conservation Congress to express their opinions, encourage intergenerational partnerships and help future leaders prepare themselves to address the complex global challenges of our world.

Mr Ron Simpson and Ms Luisa Tagicakibau from Fiji, and Ms Deyna Marsh from Cook Islands combined Pacific cultures through drama, song, images, and dance to convey Climate Change issues that Pacific Island Countries (PICs) are currently facing in the region and the vision statement of the 40 participants who attended the Pacific Future Environment Leaders Forum in March 2008.

These three Pacific youth were among

the participants that had attended the Pacific Future Environment Leaders Forum (PFELF) that was held in Suva, Fiji in March 2008.

“‘Involve youth in building resilience of Pacific islands to climate change’ was the message shared by Pacific youth representatives with delegates at a SPREP-sponsored side event at the IUCN WCC,” said Active member of the 2008 Pacific Year of the Reef Cook Islands campaign team and officer with the Cook Islands National Environment Service, Ms Deyna Marsh.

“Young people in the Pacific know its time to take action in this climate of change, and through a vision statement developed at the Forum we are calling on more young people to be part of the change and our leaders to guide us and support us,” further stated Ms Marsh in their presentation.

The three representatives called on Pacific leaders and elders to involve youth in projects, provide opportunities for capacity building, encourage young people, and facilitate youth action to help their communities and governments achieve their sustainability goals.

The same message was echoed at all youth-related sessions throughout the week-long meeting.

The group also identified obstacles to Pacific youth involvement in planning and decision making with Ms Tagicakibau



Pacific Youth Team from left: Ms Luisa Tagicakibau, Mr Ron Simpson, Ms Deyna Marsh singing environment songs to convey the message and the vision statements that was the outcome of the PFELF held in March, 2008 (Photo source: R. Simpson)

highlighting the ‘culture of silence.’ Suggestions for overcoming this and other obstacles to include establishing a youth and environment resource centre that could provide youth and youth groups with access to information, training opportunities, and funds for youth-led projects.

“The positive responses we received after our presentation was overwhelming and

we were also inspired by young environment leaders from other parts of the world,” Ms Marsh recalled.

The Pacific youth delegates were part of a delegation to the Congress supported by IUCN Oceania and sponsored by SPREP.

For more information please contact Ms Deyna Marsh on email: deyna@environment.org.ck

Cook Islands volunteers clean up the Avarua sea frontage

“Let’s sea to it! Keep our island and lagoons clean!” was the message taken to heart by eighty-one volunteers who marked a Clean Up the World event held in Cook Islands in September, 2008.

The annual event was coordinated by the Cook Islands National Environment Service, The Dive Centre, Whale Education and Research Centre, and the Ministry of Marine Resources in a bid to improve the health of underwater ecosystems. The clean-up campaign focused on cleaning Avarua Harbour and nearby coastal areas of Avarua town centre in the Cook Island.

In thanking volunteers, Director of the Cook Islands National Environment Service, Mr Vaitoti Tupa, praised all who spent a Saturday morning making clean coasts a reality.

“This is a great example of how people can cooperate to take action and make positive contributions to communities,” said Mr Tupa.

Mr Tupa also acknowledged the support organizers received from non-Government organisations, local businesses, regional organisations including SPREP, and the 2008 Year of the Reef campaign. Volunteers were rewarded with sausage sizzles, certificates of participation, and t-shirts.



Volunteers clean up the the Avarua Harbour and the nearby coastal areas to mark the Clean Up World Day. Deyna Marsh (sitting) of the Cook Islands National Environmental Services was part of the team organising the activity, September 2008.(Photo source: D.Marsh)

The severity of the litter problem was enunciated by The Dive Centre’s Ms Sabine Janneck who acknowledged the tangible impact of cleaning the local area. “Although there was less rubbish underwater compared to last year, we collected almost twice as much rubbish

on-shore this year as we did in 2007,” she said.

“We collected a truck-load of rubbish in only two hours consisting of at least 689 aluminium cans, 654 plastic bottles, 468 plastic bags, 593 plastic glasses, 256 glass bottles, and 635 food containers,” Ms

Janneck explained.

Ms Deyna Marsh from the National Environment Service who has coordinated this type of activity for the past few years said it was an ‘awesome’ turn-out on a Saturday, a day when most locals are shopping.

“It was great to see the local divers as well as visitors to the island who wanted to make a difference today. We can’t just sit around and talk because we won’t get anywhere so why can’t we make it a fun activity? Everyone enjoyed themselves and is looking forward to the next community environmental activity.”

With vital information collected on different types of materials littering their island environments, the event is also a useful tool for local education campaigns. Information is also provided to Project AWARE which submits this information to the Ocean Conservancy. The data becomes a powerful tool that is used to inform the public, governments and businesses of the damaging effects of debris.

Contact Deyna Marsh of the Cook Islands National Environment Service at deyna@environment.org.ck for further information on this event or other community environmental activities in Cook Islands.

SCC and PACE-SD Partnership in Composting of Organic Waste

The Suva City Council and USP's Pacific Centre for Environment and Sustainable Development (PACE) has been experimenting with composting organic waste from the Suva market. Managed by SCC, this project commenced late 2007 and is at its final phase. Through funding from the British High Commission, PACE was able to render technical assistance to the SCC workers on the composting

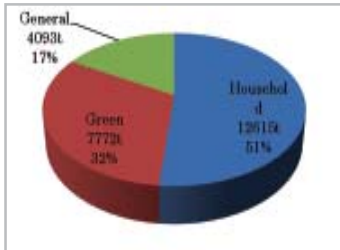


Figure 1. Solid Waste collected and is disposed at the Naboro Landfill, Fiji in 2007. (Source: SCC)

methodology. The British High Commission funded PACE to provide technical assistance to the SCC workers on the composting methodology.

The main objective of the study is to confirm the practicability of composting at the municipal level and to transfer practical composting skills to the SCC staff.

PACE investigated suitable methodologies for composting in the region. It showed that composting in the region use animal manure as an ingredient but this is not suitable for urban dwellers and others that do not have access to animal manure.

Composting is a natural process of decomposition of organic materials. It is an exothermic (heat producing) reaction and the temperature of the compost pile is an excellent indicator of composting. Composting offers several benefits such as enhanced soil fertility and soil health, therefore increased in agricultural activity, improved soil biodiversity, reduced ecological risks and a better environment. PACE scientifically tested

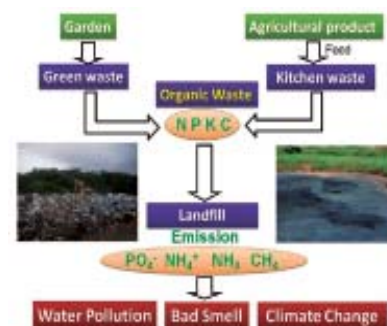


Figure 2. The impacts of poor waste management on solid waste. (Source: SCC Mid Report)

the efficiency of composting using green and putrescible (kitchen) wastes into three composting configurations as listed below:

1. Open windrows – composting into piles

built on ground

2. Closed tumblers – PVC drums that are rotated on a standing platform

3. Vermicomposting – using local earthworms to break down organic waste material.

The investigation of these configurations was completed in 2007 and PACE in partnership with SCC began their discussions to further testing the Open windrows on a large scale to produce high quality compost.

SCC presently collects household, green/garden and other municipal solid waste (SW) and dispose them at the Naboro landfill. About 24,500 tons of SW was collected in 2007 and it cost SCC about \$ 2.77 million (Fig.1). However, the cost of SW management alone is not only the issue to be reckoned with because Fiji has a new Environment Act and National Solid Waste Management Strategy which emphasizes waste minimisation and improved SW management practices at all levels.

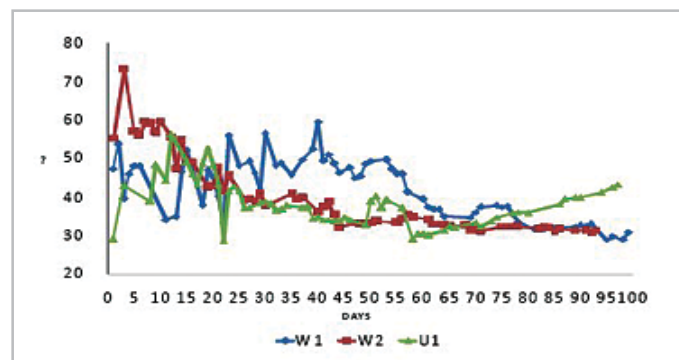


Figure 3. Graph of temperature of the two composting windrows that was built at the SCC Depot, Suva, Fiji. (Source: SCC Mid Report)

A recent study conducted by SCC and PACE showed that 70% of wastes generated at the Suva market are organic-based and therefore amenable to composting.

Composting is not only about value-adding and utilizing the wastes but it is also about reducing emissions (e.g. leachate and greenhouse gases - GHGs) at the landfill. One of the key emissions from organic wastes disposed at the landfill is methane, which contributes to the climate change (Fig. 2), and is presently not managed at the Naboro landfill. Implementation of alternatives to reduce the amount of organic wastes flowing to the landfill will also contribute to lengthening its lifetime. Given the above circumstances, SCC and PACE decided to explore composting, and investigate thoroughly the technical viability of composting as an alternative SW management option through a pilot project.

The composting operations at the SCC depot began in June, 2008 and the SCC

workers were trained on the various steps to take when compiling a compost pile. The waste materials were collected from SCC's contractors, USP grounds men, and from the vendors at the Suva Market. The market waste collected included discarded vegetable such as cabbage, rourou leaves and stems, jackfruits, taro stems, and cassava peelings. The green waste consists of grass clippings and brown waste; that is brown leaves/twigs and dried-out grass clippings that were collected from the SCC parks and USP. The 'compost calculator' which is available on the website www.gmt-organic.com was used to estimate the appropriate ratio of feed-materials to be used.

Market wastes were collected from the municipal market on Saturdays in which most wastes (feed-materials) were generated. About 30-50 flour bags were distributed to cooperative vendors in the morning and collected around noon. The feed-materials were transferred to Samabula Depot by SCC in open garbage

Composting: Making Usable compost with windrows method

Basic ingredients

1. Dried leaves and twigs (no large branches and pieces of wood only dried leaves). (*1 bucket)
2. Fresh wet grass. (1 bucket)
3. Vegetable waste: vegetable peelings etc. (½ bucket)
4. ¼ bucket water.

NB. [Do not use the following- cooked foods, meat and bones, lemons ('moli') etc., chillies]

[*- A bucket in this case would be equal to a 10L bucket]

The recipe is therefore:

1 bucket leaves + 1 bucket fresh grass + ½ bucket + ¼ bucket water = GOOD compost

Method.

1. Mix together grass, leaves, and vegetable waste together in a clear space on the ground, and mix thoroughly.
2. Make a pile large enough to be 1.1m.
3. The compost heap can be turned on a daily basis by using a digging fork. This means turning the pile inside out by mixing the compost again.
4. The right amount of moisture or 'wetness' is very important and the compost should feel like a wet sponge or wet towel.
5. No new material should be added after the first batch has been made.

Quick compost tips.

* Compost should be turned every day for the first two weeks, and then 3 times a week after that.

* It is also normal for temperatures to heat up; in the first few days after the compost is made some it is normal for the compost to feel warm. Using the "squeeze test" you should be able to determine whether or not there is sufficient moisture available for the compost. Compost needs to be kept moist and not wet.

* After at least 1.5 to 2 months without adding new material your compost should be ready to be removed and left in an open area or in a heap to mature completely.

* Completed compost should be of a very earthy smell with no odors or smells and should be very similar to dark soil.

* You can keep adding as much compost feed, as you like as long as you keep adding them in the quantities shown in the recipe.

For more information please contact Ms Daiana Taoba on email: startoceania@usp.ac.fj

For more information please contact: Mr Kazuya Yao on email: cowboybebop2040@yahoo.com or Ms Daiana Taoba on email: startoceania@usp.ac.fj

Conferences

12-16 January 2009 International Conference on Water, Environment, Energy and Society (WEES-2009), New Delhi, India. Contact: wees09@yahoo.com.

1 February 2009 APN International Seminar on "Biodiversity and Human Dimensions: Promoting Harmonious Coexistence". Kobe, Japan. Contact: infor@apn-gcr.org

2-6 February 2009 The 3rd GEOSS Asia-Pacific Symposium "Data sharing for a Transverse GEOSS". Kyoto Research Park, Kyoto, Japan. Please contact: geoss-app3@restec.or.jp

3-4 February 2009 Energy and Climate Summit 2009: Meeting New Challenges. Hotel le Meridien, New Delhi, India. Please visit the website for details: <http://www.irade.org>

16 February 2009 International Symposium on "Realising Low Carbon Cities: Understanding and Analysing Urban Energy and Carbon" Nagoya, Japan. Please visit <http://www.gcp-urcm.org/A20090217/HomePage>

16-20 March 2009 APN 14th Inter-Governmental Meeting/Scientific Planning Group Meeting and Committee Pre-meetings. Kuala Lumpur, Malaysia. Contact: Mohsin.iqbal@gcisc.org.pk

23-26 March 2009 GREENHOUSE 2009: Climate Change and resources. Perth, Western Australia. For more information please visit www.greenhouse2009.com

26 - 30 April 2009 International Science Conference on the Human Dimensions of Global Environmental Change(Open Meeting) "Social Challenges of Global Change", Bonn, Germany.

4-15 17th Session of the UN Commission on Sustainable Development. New York. Please visit <http://www.un.org/esa/sustdev/calendar/may2009.htm>

14-15 May 2009 Public Forum & Training for the Project "Climate Perturbation and Coastal Zone Systems in Asia Pacific Region: Holistic Approaches and Tools for Vulnerability Assessment and Sustainable Management Strategy". Sri Lanka. Please contact: dushmanta.dutta@sci.monash.edu.au

6-7 July PAGES First Young Scientist Meeting: Retrospective Views on Our Planet's Future. Oregon State University, Corvallis, USA. Contact: ysm@pages.unibe.ch or visit <http://www.pages-osm.org/>

"Plastic free for christmas", Fiji's DoE and Westpac Fiji Corporation Campaign

In an effort to minimize the use of plastic bags and create awareness on its harmful effects on our health and the environment, the Fiji's Department of Environment (DoE) with the support of Westpac Fiji Banking Corporation embarked on a festive season campaign 'Plastic Free Christmas' that was launched by His Worship the Lord Mayor of Suva City Council, Mr Peni Volavola, on Saturday November 29, 2008 at the Morris Hedstrom City Centre display. The event brought together more than 100 shoppers to witness the half a day event.

Plastic shopping bags are becoming a significant issue in Fiji due to its disposal treatment and its harmful effect on the environment.

"Traditionally 'waste' was not much of a problem in Fiji as most were biodegradable and either rotted or were eaten by animals. However, with changing consumer demands, the number of plastic bags being used has increased dramatically and as a result their disposal is becoming a major concern in Fiji, as it is globally," said the Director of Fiji's Department of Environment, Mr Epeli Nasome.

"Plastic is the most common form of packaging at present because of its low cost and flexibility in application. So the need to create awareness amongst shoppers and retail outlets to use alternatives was crucial," further commented Mr Nasome.

Fiji's leading supermarkets such as MH, NewWorld and RB Patel supported the campaign to help create awareness for consumers to use reusable alternatives such as enviro bags or home-made bags to pack shopping in.

Some activities undertaken in the one month Christmas Campaign included the setting up of 'Green Corners' in all of Westpac's 19 branches around Fiji. Enviro Bags were distributed on the day



Fiji's Department of Environment and the Westpac Cooperation distributed enviro shopping bags for shoppers to use instead of the plastic shopping bags while doing their christmas shopping. (Photo source: Fiji's DoE)

of the launch and to the all Westpac branches as well. Radio commercials was aired on all Communication Fiji Limited and Fiji Broadcasting Cooperation Limited stations, a TV commercial was put on show for a month where the main focus was on alternatives to using plastic bags.

Aside from raising awareness of the harmful effects of plastic bags, the campaign also aims at promoting the environmentally-friendly and business-friendly alternative. These alternatives range from papers bags, homemade cloth bags, baskets to boxes.

These alternatives are E.N.V.I.R.O., that is Enhance businesses, is Necessary for the environment, Very versatile, Inexpensive, Reusable and is a viable alternative to Organize and advertise out to the public for the betterment of our environment, businesses and health.

There is one simple action that we can all take is that the next time we shop, don't leave the store carrying a plastic shopping bag. If we can all do this then we are removing one of the most lethal pollutants

created by man.

"The main drive of this campaign is trying to change people's lifestyle of using plastic bags in their everyday shopping. And to change from a routine that is heavily dependant on plastic bags to one that is not," said Mr Nasome.

Westpac's support of this great initiative epitomises the Bank's concern for Fiji's environment and commitment to the country.

"We are using all our branches to spread awareness on the harmful effects of plastic bags with each branch setting up their own "Green Corners" and also, providing thousands of enviro bags as giveaways together with the Department of Environment," said Westpac's General Manager, Mr John Cashmore.

For further details, contact: Senimili Nakora, and Lusiana Ralogaivau at Fiji's Department of Environment Ph: 3311 699 Fx: 3312 879 or Email: senimili.nakora@environment.gov.fj or snakora@gmail.com

Lusiana.ralogaivau@environment.gov.fj or lusianar@gmail.com

Pacific media form resolution on climate change reporting

>> continued from page 2
The Secretariat of the Pacific Regional Environment Programme (SPREP), the Government of Canada, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Pacific Islands News Association (PINA).

"If we want to positively change the awareness and mitigation and adaptation behaviour of Pacific Islanders to climate change, then it's very important that a consistent series of high level climate change training/capacity is provided to Pacific media in order to increase the quality, frequency and reach, and prominence and permanence of climate change reporting" said Abel Caine,

UNESCO Adviser for Communication & Information. "Partnerships are essential to continued momentum," he added.

The participants have developed a draft resolution that is now being finalised. It is hoped this will provide the basis for stronger environmental reporting legacy amongst Pacific media.

"The heart of the resolution is that it encourages wider climate change awareness work, both from Pacific reporters and from other organisations and agencies the works in climate change related issues. We are pleased that the participants have helped drive every aspect of this resolution as, at the end of the day,

it will belong to them," said SPREP's Associate Media and Publications Officer, Nanette Wooton.

The workshop brought together over a dozen senior and experienced journalists from throughout the Pacific to learn about climate change and share the experiences of reporting in their own countries. With a stronger understanding of climate change and how it effects our environment on the part of key media, the reporting which stems from Pacific journalists should provide greater benefit to local communities.

For more information please contact; Ms Nanette Wooton on email: nanettew@sprep.org