

Pacific Water newsletter

Issue 25, March 2011



Children play under dry washing, Funafuti, Tuvalu

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Welcome to the 25th official issue of the Pacific Partnership Initiative on Sustainable Water Management. This Quarterly Newsletter provides Water and Sanitation information to Pacific member governments, professionals, NGOs, CBOs, researchers, private sector and counterparts in the donor community who are interested in water sector issues and initiatives.

We would appreciate your assistance in forwarding the newsletter to other colleagues who may be interested in this initiative so that it reaches the widest possible audience.

A PDF version of the Newsletter is available on the Secretariat of the Pacific Community's (SPC) Applied Geoscience and Technology Division (SOPAC) Water website:

www.pacificwater.org/pages.cfm/water-governance/pacific-partnership-initiative/e-newsletter-subscription/

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Dear Partners

As alerted to you in the last newsletter the last eight years saw the development and implementation of a large number of National and regional initiatives in response to the Pacific Regional Action Plan on Sustainable Water Management with regional collaboration and harmonization of projects and programmes fostered through its associated Partnership Initiative.

We are pleased to announce that following the recent SPC/SOPAC Council recommendation, the region stands to undertake a new round of water and sanitation consultations. This time we expect an emphasis on National level engagement, championing and prioritization of water and sanitation issues at the highest possible levels in all Pacific Island Countries and Territories.

We are confident that members of the Partnership Initiative will play a major role to support countries and territories to undertake this process which will lead up to a strong Pacific representation at the 2nd Asia Pacific Water Summit (5-6 February 2012, Bangkok) and the 6th World Water Forum (12-17 March 2012, Marseille). More information will be shared with you on the consultation process and supporting events as soon as possible.

I would like to make use of this occasion to let you know that I have been asked by the Asian Development Bank (ADB) to join them as Climate Change Specialist for the Pacific region. After almost 11 years at SOPAC as Water Adviser it will be hard to say goodbye to everyone and hand over the role of Facilitator of the Pacific Partnership Initiative on Sustainable Water Management. I look forward to this new challenge and, as water and climate are inextricably linked in the Pacific, I am confident that I can remain in touch with you although in a different capacity.

I would like to thank all the members of the Pacific Partnership for the great collaboration over the years and the opportunities you collectively provided to bring attention to water and sanitation issues in Pacific island countries and turn the Sigatoka Vision of 2002 into Action. Whilst there are still many water and sanitation issues to be addressed in the region, I am confident that the Pacific Partnership Initiative on Sustainable Water Management will be retained and further strengthened through the new consultation process.

Please be also informed that until further notice, Rhonda Robinson (RhondaR@sopac.org) will be acting in my position and that the recruitment process for my successor is underway. Interested parties can access the application details via: <http://www.sopac.org/index.php/new-vacancies> and or <http://www.pacificwater.org/pages.cfm/staff/vacancies/deputy-director--water-sanitation-programme.html>

Best wishes to you all and no doubt we stay in touch!

Marc Overmars
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Facilitator of the Pacific Partnership Initiative on Sustainable Water Management
Information on partners and their activities and products can be found through the following hyperlinks on www.pacificwater.org



Increased population and urban drift on atolls in putting pressure on water resources, Tarawa, Kiribati

©Dave Hebblethwaite/SOPAC



Water for Cities: Responding to the Urban Challenge
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This is the first time in human history that most of the world's population live in cities: 3.3 billion people ...and the urban landscape continues to grow.

93% of the urbanization occurs in poor or developing countries, and nearly 40% of the world's urban expansion is growing slums.

World Water Day, March 22, 2011

Working together for water management in Pacific Urban communities

International World Water Day (WWD) is held annually on 22 March as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources. An international day to celebrate freshwater was recommended at the 1992 United Nations Conference on Environment and Development (UNCED). The United Nations General Assembly responded by designating 22 March 1993 as the first World Water Day.

Each year, World Water Day highlights a specific aspect of freshwater. This year's theme, Water for cities: responding to the urban challenge, aims to spotlight and encourage governments, organizations, communities, and individuals to actively engage in addressing the challenge of urban water management. The objective of World Water Day 2011 is to focus international attention on the impact of rapid urban population growth, industrialization and uncertainties caused by climate change, conflicts and natural disasters on urban water systems.

As with previous years, SOPAC Division is leading the Pacific regions effort to mark the WWD event, with support from the Pacific WASH Coalition Partners and country counterparts. The Pacific theme has been designated as "Working together for water management in Pacific Urban communities". The focus of the Pacific WWD activities will be on water conservation and water for health. Sustainable water management in the Pacific is in general constrained for a number of reasons: their small size, lack of natural storage, densely populated areas with strained infrastructure, competing land use, and vulnerability to weather patterns and climate change.

Global findings indicate that for the first time in human history most of the world's population live in urban centres or cities and towns. Most urbanization occurs in poor or developing countries, such as the Pacific region. The WWD 2011 event is being utilised by SOPAC Division to create awareness and bring out key messages on drinking water safety planning, water conservation, proper household water storage and handling and importance of handwashing. These messages contribute towards sustainable water management and the greater goal of improved health for Pacific communities.

SOPAC Division and UN-HABITAT are currently developing awareness materials including posters, stickers, fact sheets and t-shirts containing the key messages, for regional dissemination and use.

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Hop on Board! A new way of delivering IWRM message in Fiji

©Ty Chung/SOPAC

New bus drives home water message

The Integrated Water Resources Management (IWRM) message has gone mobile in Fiji with the launch of a bus with the message 'Water is Everybody's Business' running down the length of one side.

The 10 by 2 metre image depicts activities being carried out by a Global Environment Facility (GEF) sponsored IWRM demonstration project in the Nadi Basin and aims to raise awareness of the need for an integrated approach to improve water management and reduce risks from flooding.

Vinesh Kumar, Demonstration Project Manager, said that the bus launch was the start of a wider awareness campaign on how people from different sectors and backgrounds need to work together to improve water management and reduce the risks from flooding.

"Water doesn't belong to one person or one sector. As it flows from mountain ridges to the reef it affects and is affected by many stakeholders," Mr Kumar said. "Whether they are foresters cutting trees high in the catchment, farmers using water for agriculture, or communities and the tourism industry using water for drinking and recreation, everybody needs to play a part in improving the way we manage our water."

The water message takes up the driver side of the bus, while the entrance and back side of the bus have messages from the Department of Environment on reducing, reusing and recycling waste, and ozone protection.

Fiji's Minister for Local Government, Urban Development, Housing and Environment, Colonel Samuela Saumatua, described the bus as a bold step forward for his Ministry's national awareness campaign and a good example of a collaborative effort by various government Ministries, development agencies, NGOs and stakeholders to improve Fiji's environment and protect natural resources.

"This bus that we are launching today will carry an important message 'Water is Everybody's Business' in order to inform the public that we need to protect our water catchment sources," Colonel Saumatua said. "The Land and Water Resources Management Division of the Ministry of Primary Industry in collaboration with SOPAC Division, IUCN and other Nadi stakeholders must be commended for their continued partnership and commitment, which will see the successful completion of this project."



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Colonel Samuela Saumatua delivering the opening address at the bus launch



Marc Wilson, GEF IWRM Regional project manager congratulates, Vinesh Kumar on a job well done

©Ty Chung/SOPAC

The bus will be seen by people throughout the Nadi Basin on its daily run between Lautoka and Nadi, and by people along Viti-Levu's Coral Coast and in the nation's capital when it travels between Lautoka and Suva every Friday.

The GEF IWRM Nadi basin demonstration project is being run through the SOPAC Division. The development of the bus design was supported by the European Union funded IWRM planning programme, also at SOPAC Division.

The original artwork was taken from EU IWRM programme's awareness posters, designed by Qoriniasi Bale Jr, while the bus layout was done by SOPAC Division's Navneet Lal.

For further information contact, Vinesh Kumar: vinesh.kumar01@govnet.gov.fj



Community members gather to learn about how compost toilets can help them save water.

©Tiy Chung/SOPAC

Time for Pacific voices on water issues

In the coming years, Pacific Island Countries and Territories will face considerable challenges in the provision of safe drinking water and sanitation, and these will be further exacerbated by climate variability and climate change.

The beginning of 2012 presents a significant opportunity for the Pacific community to engage with the rest of the world on these critical issues. Two important and influential forums are scheduled in February and March 2012: the 2nd Asia Pacific Water Summit in Bangkok, and the 6th World Water Forum in Marseille.

The timing of these forums aligns with the need for the Pacific region to update and refresh the actions and commitments made under the Pacific Regional Action Plan on Sustainable Water Management (the Pacific RAP), which has been the key strategic document underpinning regional investments in water since 2002.

In response to recent Council recommendations, and in its role as the facilitator of the Pacific Partnership Initiative on Sustainable Water Management, SOPAC Division will shortly commence discussions with member countries on a suitable process to update the Pacific RAP and generate effective and timely messages to the upcoming regional and global forums.

In the coming months, SOPAC Division intends to convene a planning meeting to enable input from member countries and partners. Advice will be sought on how to make best use of local, national and regional consultative mechanisms, and how to best involve national water and sanitation APEX bodies, civil society and regional and international partner organisations.

The upcoming water forums represent a great opportunity for the Pacific community to share its diverse water stories with the world, and at the same time send some important messages about the challenges that lie ahead.

In participating in the development of these messages, we hope that water and sanitation APEX bodies can make some solid steps towards meeting the water and sanitation challenges facing their countries, while also increasing their own capacity to effectively engage in these issues into the future.

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Micronesia's Traditional Leaders and Presidents Commit to Develop Water and Sanitation Policies

In late 2010 Micronesia's Traditional Leaders and Presidents took steps to put water and sanitation issues high on their national agendas. The need to take steps to improve water and sanitation was brought to the attention of the region's Traditional Leaders at the 5th Micronesian Traditional Leaders Conference (MTLC) in November and to its Presidents during December's 14th Micronesian Chief Executives' Summit (MCES) in Palau.

This builds on water policy initiatives of the Pacific IWRM Programme in Micronesia, and recent resolutions of the United Nations General Assembly and Human Rights Commission declaring access to water as an essential human right.

An important outcome of this process was the establishment of a permanent sub-committee of the MCES tasked with addressing water and sanitation issues across Micronesia. The Traditional Leaders and Chief Executives also called on all jurisdictions to establish water task forces charged with developing national comprehensive water and sanitation policies and investment plans by 2012.

The MCES also supported the following recommendations:

- That each jurisdiction conduct National Water Summits in 2011 in order to launch National water policies;
- That each jurisdiction participate in the review of the Pacific Regional Action Plan on Sustainable Water Management;
- That the Start-up Group/Micronesian Water Committee request SOPAC Division and other partners to provide technical and financial assistance for improved water and sanitation in Micronesian Island Countries.
- In support of the UN resolution that Water and Sanitation is a human right MCES endorsed the establishment of a "Blue Ribbon Day" in support of "Water for Life" awareness campaign and that this take place annually on World Water Day (see related story).

The MTLC Declaration and the MCES Communiqué can be downloaded from: <http://www.pacific-iwrm.org/pacific-iwrm-documents/Micronesia-IWRM-Policy-Documents/>

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Micronesian Sub-Regional Participants in Pohnpei

©Christopher Paterson/SOPAC

Micronesian Sub-Regional IWRM Policy Workshop: 8th-12th November 2010, Pohnpei Island, Federated States of Micronesia

Micronesian IWRM Policy Workshop Senior government officials and national IWRM programme staff from the Republic of Palau, the Federated States of Micronesia, and the Republic of the Marshall Islands met on Pohnpei Island from 8-12 November 2010. This Sub-Regional IWRM Policy Workshop was convened to plan and prepare inputs to national consultative processes aimed at strengthening national coordination of water resource management and the development of comprehensive national water and sanitation policies.

An important outcome of the meeting was the development of plans for the conduct of National Water Summits on World Water Day 2011 (22 March). Representatives from Palau, FSM, and RMI expressed their intention to deliver reports on the state of water resources and their management in their countries, as well as framework water policies at these National Water Summits. The full report of this meeting can be accessed from: <http://www.pacificwater.org/userfiles/file/subregional.pdf>

Marc Wilson Talks Micronesia Water and Sanitation Issues on ABC Radio's Pacific Beat Program

The Regional Manager of the GEF Pacific IWRM Project, Marc Wilson was interviewed by Geraldine Coutts on ABC's Pacific Beat radio program on 20 December 2010. The interview focused on water issues in Micronesia and the outcomes of the 14th Micronesian Chief Executives Summit held in Palau in December. In response to a question about what was needed to protect Micronesia's water resources, Mr. Wilson said "...I think really it requires a multi-pronged approach, and integrated approach so to speak. So we need people in communities to do basic things like handwashing and try to not pollute their water sources, we need governments to work on their existing systems, we need donors to make sure they better direct funds in the appropriate areas. It's just a huge undertaking really." The full transcript of the interview can be accessed on the ABC website: <http://www.radioaustralia.net.au/pacbeat/stories/201012/s3097290.htm>

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L-R: EQPB Chairman Benjamin Adelbai, RMI President J. Zedkaia, Palau President Johnson Toribiong, Airai State Governor Victoria Kanai, Nauru Minister of Foreign Affairs Dr. Kieren Keke, Chief of Staff Isaac Soaladaob

©EQPB Palau

Micronesia Presidents lead the way to protect water

During the Micronesia Presidential Summit in Koror, Palau, Micronesia Presidents celebrated the International Year of Biodiversity, by getting a little dirty and planting trees in the Ngerikiil Watershed.

The tree planting was done to help reforest areas of exposed soils in an effort to minimize the amount of sediments that end up in the Ngerikiil River and as part of efforts to combat climate change.

The Heads of State from the Federated States of Micronesia, Republic of Marshall Islands and Palau planted *Pouteria obabata* (chelangel), which were prepared by the Bureau of Agriculture as part of the Palau Global Environment Facility (GEF) funded Integrated Water Resources Management (IWRM) project. The species is a native to Micronesia and was selected because of its resilience in the location's soil type.

The Ngerikiil Watershed is the main water source for over 75% of Palau's population. The GEF is running an IWRM demonstration project in the Ngerikiil catchment to protect this important water source.

GEF IWRM project manager, Lynna Thomas, said protecting and rehabilitating the river eco-system was an important step to ensuring the long term viability of the watershed to provide clean water.

"Degraded catchments leads to poor water quality and increased siltation, which affects water treatment costs and damages the coral reefs so important to Palau's tourism industry," Ms Thomas said. "Planting trees protects river banks and creates a natural buffer zone from pollution."

"The efforts of the Presidents today are an important contribution and shows the commitment of our leaders toward protecting water resources for current and future generations," she said.

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Student volunteers getting ready to spread the message.

©Mariana Phillip/RMI EPA

Marshall Islands GEF IWRM project moves to increase community awareness

The Global Environment Facility's IWRM demonstration project, based at the Marshall Island's Environment Protection Agency, has been reaching out to communities in an effort to promote better water management and improve sanitation practices.

The atmosphere was electric as three buses unloaded 75 students to participate in the first ever water campaign to take place in Laura. The campaign aimed at increasing public awareness through the distribution of seven informational water pamphlets to promote basic understanding of sanitation and hygiene.

The pamphlets, which were translated to Marshallese, were hand delivered by the students to all 302 houses in Laura. Students and team members answered questions, exchanged information and shared stories with Laura residents. Coordination between EPA-IWRM, College of the Marshall Islands-Land Grant and Tool Box champions made the day possible.

As part of IWRM's campaign to raise awareness on water, the above activities were documented to be part of video about the significance of the Laura lens.

Impressive enough, the toolbox champions started another campaign during their free lunch hour! Clean up campaign, leaving a trail of information and no trash behind!



Student's conducting awareness campaign in communities

©Mariana Phillip/RMI EPA

For further information contact, Mariana Phillip: orianaphillip@hotmail.com



Plans to protect Pohnpei's Nanpil Dam.

©FSM IWRM demonstration project

Steps taken to protect Pohnpei's main water source

Work is about to kick off in the Federated States of Micronesia (FSM), to protect one of Pohnpei's main sources of water, the Nanpil intake dam, from contamination, vandalism, animals, and unauthorized access.

Monitoring of the Nanpil River by the Pohnpei State Environmental Protection Agency has raised concerns about the amount of sedimentation, fecal coliform and other unwanted substances found in the Nanpil River. A recent increase in settlement in the immediate vicinity of the dam and the consequent increase in traffic on the dam's unsealed access road are contributing factors.

In order to protect Pohnpei's water supply from encroachment FSM's GEF-IWRM Demonstration Project in collaboration with the Pohnpei Utilities Corporation (PUC) and the FSM Transportation Communication & Infrastructure (TC&I) Ministry will surround the existing reservoir with a one thousand foot chain link fence and rehabilitate the dam's access road.

Work will be carried out by PUC and it is hoped these steps will improve the quality of the raw surface water entering Pohnpei's water treatment plant. It will also protect hydrological monitoring equipment installed by SOPAC Division's Pacific Hydrological Cycle Observing System from vandalism.

Unsustainable farming practices in riparian zones and upland forest areas is another contributor to decreased water quality and the GEF IWRM project is also working towards limiting and properly managing this and any other threats to Pohnpei's Nett watershed.

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Water water everywhere. A still from the short film

©OTV / SOPAC

Palau Wins 3rd Prize for Water and Climate Change film

A SOPAC produced film looking at the connections between climate change and water has won third place at an international short film competition run during the recent 16th Conference of Parties to the United Nations Framework Convention on Climate Change (COP 16) in Cancun, Mexico.

The film, "Modern Day Uab", was created in partnership with Palau's Roll'em Productions, and combines animation and interviews to link traditional Palauan folklore to the challenges Micronesia faces to protect its water supplies from increased climate variability.

The video was presented to thousands of participants in the "Dialogues for Water and Climate Change" session at COP 16.

Palau's President, His Excellency, Johnson Toribiong collected the award on behalf of Roll'em Productions, SOPAC Division's GEF Pacific IWRM Project, and Palau.

The "Water, Climate and ... Action!" film contest called for entries from around the world to: "Share with us your experience and tell us what your story is," in order to raise awareness of the direct relationship between climate change and water.

Water is the primary medium through which climate change influences the Earth's ecosystems and therefore people's livelihoods and well-being.

Water-related climate change impacts are already being experienced in the form of more severe and more frequent droughts and floods. Higher average temperatures and changes in precipitation and temperature extremes are projected to affect the availability of water resources through changes in rainfall distribution, soil moisture, glacier and ice/snow melt, and river and groundwater flows; these factors are expected to lead to further deterioration of water quality as well. The poor, who are the most vulnerable, are also likely to be affected the most.

Climate change is also likely to affect human health through water-related impacts of various kinds – vector-borne diseases, reduced access to safe drinking water, malnutrition due to water shortages, problems following flooding, etc.



©OTV / SOPAC

A Palauan Traditional bai



Uab greedily eating away

©OTV / SOPAC

Although much of the discussion at present is about ways to mitigate the pressures causing climate change, water is already being heavily affected by increasing climatic variability. In small island countries water sector capacity needs to be built to cope with current climate variability as an essential step to adapt to future climate change.

The GEF Pacific IWRM Project, which supported the production of the “Modern Day Uab” film, is assisting water managers increase the resilience of their water systems. This involves better management of risk and building capacity from “Community to Congress” to deal with increased variability in overall supply of water to the Small Island States of the Pacific.

The competition was organised by: The United Nations World Water Assessment Programme, UN Water, The Water Channel and the National Water Commission of Mexico.

Other finalists can be viewed here: <http://www.thewaterchannel.tv/>

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A pig and child play in a borrow pit on Tuvalu's main island Funafuti

©Dean Sewell/SOPAC

Tuvalu acts to climate proof its people

The small Polynesian island nation of Tuvalu has been the focus of climate change impacts for years. The four reef islands and five true atolls that make up Tuvalu only just break the surface of the surrounding Pacific Ocean and have an average height of 1 metre above sea level. Tuvalu's geography and location poses many challenges to the people that live there.

The atolls are regularly inundated by high tides and storms and freshwater is scarce. The contamination of groundwater from septic pollution, salt water intrusion and piggeries means rainwater is the only reliable source of drinking water. Population growth and development has resulted in food security issues and problems with waste management. Climate change will only make these problems worse but the Tuvaluan people are determined to stay on their land and retain their cultural identity. The government and organisations like SOPAC are working together to implement local solutions to these problems.

40% of Tuvalu's inhabitants live on the capital island of Funafuti. For 3000 years Funafuti's lagoon, planting pits and coconut trees have sustained the decedents of the first Polynesians to arrive here with enough fish, root crops like taro and coconuts to survive. There were some ground water sources and traditionally rain water was caught off thatched roofs and trees. While water has never been plentiful before increased population and contamination of groundwater from waste and development makes the island much more susceptible to droughts and increased climate variability.

During droughts the country relies on desalination plants but the increasing costs of fuel mean that this is now an option of last resort.

In order to increase water storage capacity and water conservation, development aid organizations like the Secretariat of the Pacific Regional Environment Programme (SPREP) and SOPAC are in the process of installing water tanks and compost toilets in households on the island.

The recently elected Prime Minister, Maatia Toafa, acknowledges that while Tuvalu is highly vulnerability to natural disasters and climate change, water shortages and food security are more immediate problems. "Tuvalu is a small island state very vulnerable to natural disasters," Toafa says but adds, "The increasing population means increasing demand for water as well. With our small tiny islands just three and a half metres above sea level, the gripping problem at present is to do with the salinity content of our underground water."



Tuvaluan fisherman have to travel further to find fish.

©Dean Sewell/SOPAC

Contaminated runoff from leaking septic tanks, piggeries and other household waste are also causing algal blooms that kill the reefs surrounding Funafuti. This has reduced the fish reserves that the population relies on for food.

Semesi Alefio is an avid spear fisherman and local marine biologist and has been studying reef conservation in the area for years. He is concerned at how quickly the reef is being affected by human activity. Rising sea levels and coastal erosion also increase contamination from sediments washing into the lagoon.

"I think one of the main cause of the coral dying along this area is mainly due to heavy human activities affecting the reef particularly from sediments from the mainland. More nutrients are being deposited onto the reef. More algae are growing and less live coral are found in places where people used to go and collect their fish," Mr Alefio said.

Many people in Tuvalu rely heavily on fishing for income and food but no longer see it as the secure livelihood they've had for generations.

"Before we lived on fish, today there is a big change, we depend on what is being brought in from overseas. Because of the reduction in fish we cannot manage to feed all the mouths in Tuvalu." says Lopati lakopo who has been supporting his family through fishing since he was young.

In recent years Tuvalu has become increasingly outspoken at international climate change conferences in an attempt to get help from the international and first world community but they are now turning to their own ingenuity within their community to fight the problem. Former President of the Tuvaluan Climate Action Network, Reverend Tafue Lusama explains that people are attempting to use more water tanks, build sea walls and stronger houses to save their community without waiting for international aid.

"Our people are not that financially capable to adapt themselves but whatever little they have they try and adapt. For example some people have tried to build up their own sea walls, to protect their shorelines. Some people have tried their best to buy water tanks, to have more water reserves," Reverend Lusama said.

Besides trying to get every household a water tank, Uatea Maimoaga, a civil engineer with the Funafati Public Works Department has come up with an ingenious design of a composting toilet which will solve the water shortage and salinity problems which in turn threatens food security. Traditional toilets take up to 30% of household water but if Tuvalu succeeds in putting composting toilets into the majority of households they will conserve the precious water resources needed to survive on this atoll. This solution is directly related to the geography of the island Maimoaga explains,



Tuvaluan landscape depicting modern day challenges.

©Dean Sewell/SOPAC

"Tuvalu's geographical and geological formation is very poor in a way as they are formed from corals and are coral atolls. The soil made up of sand and aggregate so there is an absorption problem when waste is cleaned out. The other problem is the water table. In low lying islands the water table is very high and in some places you can get water about less than a metre below the surface. Septic systems leach into the soil and don't work well when there is a high tide and the whole place is flooded with sea water."

Conserving water and increasing soil quality with compost from composting toilets will help improve agriculture on the island, improve food security and reduce the costs to the local economy from having to import food. The Director of Agriculture, Itaia Lausaveve sees improvements in home gardening as vital to the country.

"Imagine if say 70 to 80 percent of all households in Tuvalu get engaged in home gardening throughout the area," Mr Lausaveve said, "I think then we will be better off in accessing vegetables but in the meantime we import a lot,".

The people of Tuvalu are all well aware that they need to conserve their water and 78 year old home gardener, Taliu Taliu does notice the difference between now and when he was a youth. He started his garden to help his family when he realised that other food sources were threatened. He too thinks that there are available solutions for his people so they do not have to relocate.

"Apart from composting toilets, we need more water tanks and to create more awareness in the community on how they can manage their water in order for them to survive," Taliu says.

Everyone in Tuvalu realizes they must take action now, in order to survive and to avoid becoming climate change refugees. The Reverend Tafue Lusama is already sending messages to the international community that abandoning Tuvalu would be the last resort, "We all know that under the international conventions on refugees there is no provision for anyone that is called climate change refugees," he says.

The Prime Minister of Tuvalu though will be taking a hard line on negotiations at the United Nations climate change conference in Cancun to try and save his people, their culture, their land and their identity.

"I believe that we can work together to sort out the issues and the impacts emanating from climate change and I think the idea is to save Tuvalu and all other low lying countries in the world," he said.

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Discussions taking place during the South Tarawa Workshop.

©Dave Hebblethwaite/SOPAC

Kiribati Addresses Sanitation Problems

Water borne diseases continue to be a major threat in the Pacific islands, especially in low-lying atolls, such as Tarawa. The capital island of Kiribati, Tarawa, has also received almost no rainfall over the last three months, putting additional stress on limited water supplies.

However, recent actions by Kiribati to put in place a National Sanitation Policy means it is showing the rest of the Pacific the way forward to address these problems.

Mr Riteti Maninraka, Secretary of the Ministry of Public Works and Utilities, said that having a National Sanitation Policy and Implementation Plan in place should provide direction on how the nation will work with the community and development partners to help solve its sanitation problems in Tarawa and the country's outer islands.

"Policy is just a start but we now need to put in the hard work to address the issues throughout the country and especially in places like South Tarawa," Mr Maninraka said. South Tarawa, where fifty percent of the population lives, experiences one of the highest levels of water-borne disease in the Pacific. Water borne diseases are a result of poor sanitation, poor hygiene and contaminated water.

Mr Maninraka was speaking at a recent workshop facilitated by the Pacific Infrastructure Advisory Centre and SOPAC, in which Government, stakeholders and development partners discussed the various challenges facing South Tarawa.

"The workshop produced a set of clear messages to development partners on the actions needed on South Tarawa to protect water resources, deliver water supply, provide safe and appropriate sanitation and manage solid waste," Mr Maninraka said.

"These messages are to be incorporated into a Government programme aimed at achieving the urgent infrastructure improvements needed to secure South Tarawa's future."

The country's National Sanitation Coordination Committee developed the National Sanitation Policy and Implementation Plan, with the assistance of SOPAC Division through its EU-funded Pacific Integrated Water Resources Management (IWRM) Planning Program.



©Dave Hebblethwaite/SOPAC

Drawing up water from the Well.

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Pristine rock pools, Niue.

©Ty Chung/SOPAC

Study finds no contaminants in Niue's groundwater

A recent analysis of Niue's groundwater that tested for selected chemical and organic pollutants has found that the country's water supply is very good and well within global standards.

The study focused on all 16 boreholes used to pump Niue's drinking water, three monitoring boreholes located on the island's central, northern and southern areas and a borehole found on Vaiea farm.

Due to local concerns of pollution from pesticides like paraquat, groundwater was tested for traces of all pesticides used on the island. The study found that there was no contamination from pesticides with levels recorded well below the World Health Organisation (WHO) guidelines.

Water was also tested for selected chemicals (calcium, magnesium, sodium, chloride, sulphate, nitrate as NO_3 , iron, manganese, lead and copper).

The study found that there was no contamination from nitrates, usually caused by fertiliser runoff or pollution from animal and human waste; copper, which can cause gastrointestinal problems at high concentrations; lead, which has serious effects on human health; and manganese, which effects pipes and other water distribution systems.

Other chemicals tested for are naturally occurring in Niue's limestone geography and posed no health threat. It was found though, that the high mineral content of Niue's groundwater meant that the hardness of the water ranged from hard to very hard.

The groundwater analysis in Niue was successfully conducted in partnership between the Niue Department of Health, SOPAC and the World Health Organisation (WHO).

Recommendations included the continuation of Niue's drinking water safety planning framework and that it be implemented within the larger framework of Integrated Water Resources Management (IWRM) to ensure everyone from the community to cabinet understand their responsibility and contribute to protecting Niue's water resource.

For the full report go to: <http://www.pacificwater.org/userfiles/file/Niue%20Groundwater%20Analysis%20Aug%202010%20final.pdf>

For more information contact, John Hetutu: environ.health@mail.gov.nu



An Economic Assessment of Drinking Water Safety Planning Koror-Airai, Palau

To overcome limitations of end-product testing to ensure drinking water safety, the latest edition of the WHO Guidelines for Drinking-Water Quality (WHO, 2004) emphasises effective preventive management through drinking water safety planning (DWSP).

The Koror-Airai drinking water safety plan in Palau contains a list of water management improvements to be made within a stated tentative timescale.

A Cost-Benefit Analysis undertaken by natural resource economist at SOPAC Division aims to compare the costs of implementing the improvement schedule to the long-term benefits of doing so.

The information generated is to be used to inform stakeholders in Palau of the rewards from supporting the DWSP approach, demonstrating the potential benefits of investing in the Plan.

The Analysis concludes that the expected net benefits of the K-A drinking water safety plan in Palau are thus estimated at US\$ 1.1 million – a return of US\$ 5.90 on each US\$ 1.00 invested.

To view the full report go to: <http://www.pacificwater.org/userfiles/file/water%20publication/TR440%20final.pdf>

SOPAC

**An Economic Assessment of Drinking Water Safety Planning
Koror-Airai, Palau**

Federica Gerber
Ocean and Islands Programme

November 2010

SOPAC Technical Report 440



Technical Report on the economic assesment

For more information contact, Federica Gerber: federica@sopac.org



The UN General assembly in session.

©UN

United Nations declares access to water and sanitation a universal human right: The Pacific could do more

On July 28, 2010, by a vote of 122 countries in favour and none against, the United Nations General Assembly (UNGA) adopted a resolution that saw the access to water and sanitation become a fundamental human right.

This was followed on September 30th by the UN Human Rights Commission adopting by consensus a resolution affirming that water and sanitation are human rights, thus making it a legally binding obligation of all UNGA members.

Water and sanitation are, however, a right that many in the Pacific don't enjoy.

The region's access to improved drinking water and sanitation lags behind the rest of the world. About 46% of Pacific populations have access to improved drinking water compared to the global average of 87%. Similarly only 48% of Pacific populations have access improved sanitation compared to 62% globally.

Oceania collectively has been off-track in meeting the UN's Millennium Development Goal (MDG) targets for water and sanitation. The percentage of the region's population with access to safe drinking water and sanitation facilities has in fact declined by 1% and 2% respectively.

In the Pacific more than 20% of all deaths in children up to 14 years of age is attributable to unsafe water, inadequate sanitation and insufficient hygiene. This number is even higher for children under five years of age. Recent outbreaks of typhoid in Fiji and cholera in Papua New Guinea further highlight the need to improve water and sanitation.

Marc Overmars, Head of the Applied Geoscience and Technology Division (SOPAC) Water and Sanitation Programme said that it was a situation that needs urgent attention and called on governments, aid donors and all stakeholders in water to do more to remedy the situation.

"Up to now there has been a lot of commitment but not a lot of action on this issue," Mr Overmars said. "Improvement of water and sanitation services not only require increased investments but also a strengthened capacity in Pacific island countries."



©SOPAC

Sanitation issues in the Pacific a major challenge.

"In 2006 Pacific Leaders agreed that the water, sanitation and hygiene challenges facing the region should be addressed through implementation of the Pacific Regional Action Plan on Sustainable Water Management (RAP). In December 2007, Pacific Leaders attending the Asia Pacific Water Summit in Japan reiterated their commitment to the provision of adequate sanitation and safe drinking-water for their people. Yet, water and sanitation are not identified as a priority under the 2009 Forum Leaders' decisions.

"The Forum did identify priorities, such as economic development, agriculture, health, land management and climate," Mr Overmars said. "These are all critically dependent on the sustainable management of water resources."

In pursuing resolution to include water and sanitation as a human right the UN General Assembly expressed deep concern that globally some 884 million people were without access to safe drinking water and more than 2.6 billion lacked access to basic sanitation and expressed alarm that 1.5 million children under five years old died each year as a result of water- and sanitation-related diseases. It acknowledged that safe, clean drinking water and sanitation were integral to the realization of all human rights.

Globally the lack of access to water killed more children annually than AIDS, malaria and measles combined, while the lack of sanitation affected 2.6 billion people, or 40 per cent of the global population,

Bolivia's representative said the upcoming summit to review progress on the Millennium Development Goals must provide a clear signal that water and sanitation were human rights. He emphasized the right to drinking water and sanitation was essential for the full enjoyment of life.

The resolution was passed by a vote of 122 in favour to none against, with 41 abstentions. Of the Pacific Island forum Countries at the UN, Samoa, Solomon Islands, Tuvalu and Vanuatu voted in favour of the resolution. Australia and New Zealand abstained. Fiji, Kiribati, the Marshall Islands, Federated States of Micronesia, Nauru, Palau, Papua New Guinea and Tonga were absent.

SPC - SOPAC Division is the regional agency mandated to coordinate water and sanitation through the Pacific through its Water and Sanitation Programme. It provides support to member countries through three components: Water Resources Management, Water and Sanitation Service and Water Governance.

The MDG on water and sanitation is to reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation.



©Dave Hebblethwaite / SOPAC

Kiribati water infrastructure

For further information contact, Tiy Chung: tiy@sopac.org



Blue water ribbon

Blue Water Ribbon Launched

The Pacific Blue Water Ribbon campaign was launched on December 17, 2010, at the Micronesian Chief Executives Summit (MCES) in Palau.

Micronesia's Presidents wore them proudly at the launch and the MCES joint communiqué endorsed the establishment of a "Blue Ribbon Day" in support of "Water for Life" awareness campaign and that this take place annually on World Water Day.

The Blue Water Ribbon was developed to raise awareness of water issues in the Pacific and as a way for people to publically express their commitment to improving the management of, and access to, water and sanitation.

By wearing the blue water ribbon people:

- ❁ Acknowledge that water is everybody's business
- ❁ Recognise that water and sanitation are fundamental human rights
- ❁ Call for increased actions to achieve the Water and Sanitation Millennium Development Goal Targets
- ❁ Value water as a finite and vulnerable economic resource
- ❁ Strive to protect water for the environment, human health and economic development
- ❁ Will work to reduce climate change impacts on water resources
- ❁ Recognise the important role of women in water management

The Pacific IWRM communications advisor, Tiy Chung, said the campaign was made possible through the efforts of Micronesia's IWRM focal points and hopes that it will expand throughout the Pacific in 2011.

"Micronesia has really taken the lead with this and are successfully increasing awareness and action on water and sanitation issues," Mr Chung said. "But this is just the beginning. We plan to roll this campaign throughout the rest of the Pacific this year and be looking at getting more individuals, businesses, NGOs, development agencies and governments on board."

For further information contact, Tiy Chung: tiy@sopac.org



Screenshot of the Pacific Water Facebook page.

Pacific Water now on facebook

In order to share the latest water news as fast as possible Pacific Water is now on facebook. The Pacific Water SOPAC facebook page is a place where people and organisations with an interest in water issues in the Pacific and globally can share reports, news stories, start conversations or network with others.

Friends of Pacific Water SOPAC page are encouraged to post stories from their countries and/or organisations, use the site to discuss issues, link to any relevant reports, videos, audio, and to grow the Pacific Water network by inviting people they think share the same interest. The page can also be used to post upcoming events and conferences.

To become a friend of Pacific Water on facebook, search for PacificWater Sopac (Note that Pacific and Water are one word and SOPAC has lower case opac) in the find friends section of your own facebook page.

If you have any questions or would like more information on how to join our facebook page please email pacificwater@sopac.org.

For further information contact, Tiy Chung: tiy@sopac.org

Pacific IWRM Super 15s Rugby Competition

The Pacific IWRM Programme launched an online rugby competition in 2010 to provide an informal forum for the online sharing of information amongst project staff. This ended up with 165 individuals participating from 34 Pacific Island government departments and NGOs. The Project Steering Committee identified that this competition had been highly effective in raising awareness of IWRM amongst water related stakeholders in the Pacific. It was decided that this should be repeated in 2011. In this connection, Pacific-IWRM.org is proud to launch the Pacific IWRM 2011 Super 15s Rugby Competition.

The competition is open to **ANYONE**, sign-up is **FREE**, the rules are **SIMPLE**, and the prizes are **GREAT**. For more details visit <http://www.pacific-iwrn.org/>

For further information contact, Christopher Paterson: christopher@sopac.org





water calendar 2011

Date	Event	Location	Details
22 March 2011	Federated States Of Micronesia National Water Summit	Phonpei , Federated States of Micronesia	The Summits will be a high level event, bringing together stakeholders in water and sanitation sector to address issues pertaining to the sector. The National Water Summits on World Water Day 2011 (22 March) are aimed at benchmarking the state of water resources and their management.
22 March 2011	Republic of the Marshall Islands National Water Summit	Majuro, Marshall Islands	The Summits will be a high level event, bringing together stakeholders in water and sanitation sector to address issues pertaining to the sector. The National Water Summits on World Water Day 2011 (22 March) are aimed at benchmarking the state of water resources and their management.
22 March 2011	World Water Day	Worldwide	<p>This year's theme, Water for cities: responding to the urban challenge, aims to spotlight and encourage governments, organizations, communities, and individuals to actively engage in addressing the challenge of urban water management.</p> <p>As with previous years, SPC-SOPAC is leading the Pacific regions effort to mark the WWD event, with support from the Pacific WASH Coalition Partners and country counterparts. The Pacific theme has been designated as "Working together for water management in Pacific Urban communities". The focus of the Pacific WWD activities will be on water conservation and water for health.</p> <p>http://www.worldwaterday.org/</p>
23 March 2011	World Meteorological day	Worldwide	<p>Each year, on 23 March, the World Meteorological Organization, its 189 Members and the worldwide meteorological community celebrate World Meteorological Day around a chosen theme. This day commemorates the entry into force, on that date in 1950, of the WMO Convention creating the Organization. Subsequently, in 1951, WMO was designated a specialized agency of the United Nations System.</p> <p>This year, the theme is "Climate for you".</p> <p>http://www.wmo.int/worldmetday/</p>
29 March 2011 - 2 April 2011	6th IWA Specialist Conference on Efficient Use & Management of Water	Jordan	The sixth IWA Specialist Conference on Efficient Use and Management of Water is being held this Spring, under the theme of 'Water Demand Management: Challenges and Opportunities'. The conference will address key water management and efficiency issues facing both developed and developing countries, serving as a podium for water professionals and stakeholders to voice pressing concerns and research findings, share insights into water management experiences, showcase modern technologies that facilitate water use efficiency, propound best management practices, and discuss alternative water resources, among other things. It will also bring together over 500 policymakers, industry leaders, experts and practitioners, presenting a distinctly ideal opportunity for networking.



water calendar 2011

Date	Event	Location	Details
18-22 April 2011	10th IWA Specialised Conference on Small Water and Wastewater Systems and 4th Conference on Decentralised Water and Wastewater International Network	Venice, Italy	The main theme of the event is small and decentralized water and wastewater systems, including reuse and resources oriented sanitation. The event is open to all with an interest in small and decentralized wastewater treatment systems and reuse.
22 April 2011	World Earth Day	Worldwide	In recognition of the power of millions of individual actions, Earth Day 2011 will be organized around A Billion Acts of Green Personal, organizational and corporate pledges to live and act sustainably. The goal is to register one billion actions in advance of the Earth Summit in Rio in 2012 http://www.earthday.org/earth-day-2011
2-5 May 2011	HydroEco2011: 3rd International Multidisciplinary Conference on Hydrology and Ecology: Ecosystems, Groundwater and Surface Water - Pressures and Options	Vienna, Austria	This conference brings together engineers and researchers from engineering and ecological disciplines. The Conference provides a contribution to the implementation of UNESCO's International Hydrological Programme (IHP).
11-13 May 2011	Water Industry Operations Group of New Zealand 2010 Operations for the Future Conference	Queenstown, New Zealand	The 2011 Conference is well into its planning stage and looks to be shaping up to be another excellent event. The Conferences provides the opportunity for Water Operations Professionals a forum to share knowledge, experiences and lessons learnt. http://www.wiog.org.nz/
16-20 May 2011	WASH Conference	Brisbane, Australia	In 2011 practitioners and professionals from governments, donors and NGOs, students and academics, will come together to discuss one of the greatest challenges to the water, sanitation and hygiene sector: sustainability.
22 May 2011	International day for Biodiversity	Worldwide	The United Nations proclaimed May 22 The International Day for Biological Diversity (IDB) to increase understanding and awareness of biodiversity issues. On the occasion of the 2011 International Year of Forests, the theme for International Day for Biodiversity in 2011 has been selected to be "Biodiversity and Forests."



water calendar 2011

Date	Event	Location	Details
8 June 2011	World Oceans Day	Worldwide	The concept for a "World Ocean Day" was first proposed in 1992 by the Government of Canada at the Earth Summit in Rio de Janeiro. As a result of a United Nations General Assembly resolution passed in December 2008, World Oceans Day is now officially recognized by the UN as June 8th each year. http://worldoceansday.org
22 June 2011	World Environment Day	Worldwide	World Environment Day celebration began in 1972 and has grown to become the one of the main vehicles through which the UN stimulates worldwide awareness of the environment and encourages political attention and action. http://www.unep.org/wed/about/
24-27 June 2011	International Network of drinking water quality regulators meeting	Cape Town, South Africa	International Network of Drinking-Water Quality Regulators: Announcement Call for Planning Committee Representation - WHO-IWA Water Safety Conference, 2011
4-8 July 2011	Singapore International Water Week	Singapore	The Singapore International Water Week is the global platform for water solutions that brings policymakers, industry leaders, experts and practitioners together to address challenges, showcase technologies, discover opportunities and celebrate achievements in the water world. Themed "Sustainable Water Solutions for a Changing Urban Environment", the 2011 event reinforces Water Week as a platform for solutions to address the latest and most pertinent water issues amidst a rapidly changing world.
25 - 29 July 2011	Third Regional Steering Committee Meeting and the Fourth Meeting of the EU funded IWRM Planning Programme	Rarotonga, Cook Islands	The Regional meeting will be organised in partnership between the GEF IWRM Demonstration Project and the IWRM Planning Programme. It will bring together country representatives, demonstration managers and regional partners to assess the progress of the projects and provide an opportunity for feedback. This year's Regional meet is being hosted by the Cook Islands IWRM Team and the Ministry of Infrastructure and Planning (MOIP)
1-5 August 2011	IWC IWRM Post Graduate Diploma Face to Face Training	Rarotonga, Cook Islands	Following on from the regional meeting, the second face to face training programme will be implemented by the IWC team. The 20 students from across the region will be brought together in Rarotonga for this training. The IWC will run the students through an intensive week long programme working on specific modules of the post graduate diploma with them.
21-28 August 2011	2011 World Water Week: Responding to Global Changes - Water in an Urbanising World	Stockholm, Sweden	Under the theme "Responding to Global Changes: Water in an Urbanising World," the 2011 World Water Week will take place in Stockholm, from 21 to 27 August. The programme for this year will be dynamic and diverse, including vital topics such as urban governance, planning, adaptation and risk reduction, resilient supply chains, equitable service delivery and technologies for resource prudent modern lifestyles in increasingly liveable cities.

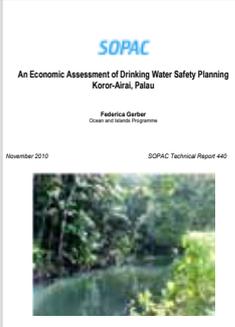


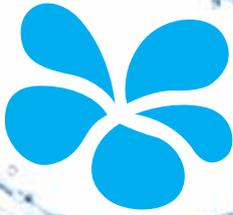
water calendar 2011

Date	Event	Location	Details
18-23 September 2011	15th International Conference of the IWA Diffuse Pollution Specialist Group	Roturua, New Zealand	This conference will be held concurrently with a conference of the IWA Health-Related Water Microbiology Specialist Group (HRWM), and will feature a special combined session on "Microbial Diffuse Pollution". The conference will provide a forum for discussing international developments in science and policy approaches to diffuse pollution control.
3-7 October 2011	Caribbean Water and Waste Water Association Conference	Guadeloupe	The Caribbean Water and Waste Water will be holding its 20th Conference AND Exhibition in Guadeloupe from the 3rd to 7th October. More information available on http://www.cwwa.net/home/
9-14 October 2011	WSSCC Global Forum on Sanitation and Hygiene	Mumbai, India	The meeting represents a major push by WSSCC to respond to members and other professionals in their demand for knowledge, tools and networking that support their efforts to improve the sanitation and hygiene situation locally, nationally, regionally and globally. It will inform, engage and enable them to carry out their work better, and will strengthen WSSCC's vital grassroots links.
12-13 October 2011	international Conference on Integrated Water Resources Management - Management of Water in a Changing World: Lessons Learnt and Innovative Perspectives	Dresden, Germany	The conference will provide an opportunity for scientists, practitioners, water managers and professionals from economy, administration, international agencies, private institutions and consulting establishments to come together to express their opinions and interest.
25-29 November 2011	XIVth IWRA World Water Congress	Porto de Galinhas, Brazil	The triennial World Water Congress of the International Water Resources Association (IWRA) continues a tradition of meetings designed specifically for water resources professionals - practitioners, researchers, decision-makers, and others. The XIV Congress will address Adaptive Water Management: Looking to the Future.
5-7 December 2011	Water and Society 2011	Las Vegas, United States	This first International Conference on Water and Society aims to provide a multi-disciplinary forum for the presentation and discussion of many issues affecting water resources today. The meeting will encourage trans-disciplinary communication on issues related to the nature of water, and its use and exploitation by society.



latest water publications

Title	Details
<p>Technical Report on the Economic Assessment of Drinking Water Safety Planning, Palau</p> 	<p>This Cost-Benefit Analysis aims to compare the costs of implementing the improvement schedule to the long-term benefits of doing so. The information generated is to be used to inform stakeholders in Palau of the rewards from supporting the DWSP approach, demonstrating the potential benefits of investing in the Plan. The Analysis concludes that the expected net benefits of the K-A drinking water safety plan in Palau are thus estimated at US\$ 1.1 million – a return of US\$ 5.90 on each US\$ 1.00 invested.</p>
<p>Adapting to Climate Change in water resources & water services in Caribbean & Pacific small islands countries</p> 	<p>SOPAC provided a joint contribution with CEHI to the preparation of a session at the 5th World Water Forum on water and climate change adaptation through a Perspective Document on Adaptation to Climate Change in water resources and water services in Caribbean and Pacific island countries. The outcomes of the Perspective Documents were summarised by WWC, IUCN and CPWC and included the recognition for SIDS as being one of the hotspots deserving attention. The Perspectives on water and climate change adaptation led furthermore to the consortium's publication towards a framework for climate-proofing "don't stick your head in the sand!". The above documents are providing guidance to climate adaptation in the water sector in the Caribbean and Pacific island countries</p>
<p>Converting commitment into action</p> 	<p>This report provides valuable insights into sanitation and drinking water statistics in Pacific island countries. The information held within this report is timely, given the United Nations declaration that 2008 be the International Year of Sanitation and the real and very urgent need to guide further action to progress and reach the Millennium development Goals of cutting the proportion of people without access to basic sanitation in half, by the year 2015.</p>



latest water publications

Drinking Water Safety Planning A Practical Guide for Pacific Island Countries



This Guide is primarily for water supply managers, engineers and operators and introduces a more proactive way of managing drinking water supplies through a comprehensive risk assessment and risk management approach. Implementing DWSPs helps achieve a more effective drinking water supply system. While it is primarily targeted at water suppliers, this Guide should also assist other organizations, such as drinking water regulators and surveillance authorities gain a better understanding of the role played by a drinking water safety plan in improving or maintaining public health. It is important to realize that drinking water safety is an issue that cuts across several sectors, most significantly water supply and utilities, Health and Environment, but also land and water resource management, national planning and economics, NGOs, private sector and community based organizations. As such the success of developing and implementing an effective DWSP is increased significantly by engaging other sectors rather than the water supply operators or utilities working in isolation.

Integrated Water Resources Management (IWRM) Planning Brochure



The IWRM Planning Brochure has been put together and produced as a resource to help programme managers and water committees understand the planning process better. The resource is informative, illustrative and explains the need for working together to manage water sustainably. Hard copies of the IWRM brochure are available on request via iwrm@sopac.org or can be downloaded by clicking on the cover icon.

Pacific Integrated Water Resources Management (IWRM) Programme Brochure



A brief colourful overview of Integrated Water Resources Management (IWRM) and the aims and activities of the Pacific IWRM programme. Hard copies of the IWRM brochure are available on request via iwrm@sopac.org or can be downloaded by clicking on the cover icon.



selected water websites

ADB Water for All
<http://www.adb.org/water/>

Asia Pacific Knowledge Hub (APKH)
<http://www.apwf-knowledgehubs.net/>

Asia Pacific Water Forum
<http://www.apwf.org/>

AusAID
<http://www.ausaid.gov.au/>

Australian development Gateway
<http://www.developmentgateway.com.au/jahia/Jahia/lang/en/pid/9>

Cap-Net
<http://www.cap-net.org/>

Climate Front Lines
<http://climatefrontlines.org/>

Co-operative programme on water and climate
<http://waterandclimate.org/>

East-west center
<http://www.eastwestcenter.org/>

ESCAP
<http://www.unescap.org/esd/water/activities/>

European Union
<http://www.euwi.net/>

Fiji School of Medicine
<http://www.fsm.ac.fj/>

Foundation for the People of the South Pacific International (FSPI)
<http://www.fspi.org.fj/>

FSM IWRM Website
<http://www.fsmpio.fm/FSMIWRM/index.html>

GEF Pacific IWRM
<http://www.pacific-iwrn.org/>

Gender and water alliance
<http://www.genderandwater.org/>

Global Water Partnership
<http://www.gwpforum.org/servlet/PSP>

Institute of Applied Sciences (IAS), USP
<http://ias.fste.usp.ac.fj/>

International Federation of Red Cross and Red Crescent Societies (IFRC)
<http://www.ifrc.org/>

International Water Association
<http://www.iwahq.org/Home/>

International Water Centre
<http://www.watercentre.org/about>

IRC International Water and Sanitation Centre
<http://www.irc.nl/>

Island Climate Update
<http://www.niwa.co.nz/our-science/pacific-rim/publications/all/icu>

IWCAM
<http://www.cep.unep.org/iwcam>

Japan Water Forum
<http://www.waterforum.jp/eng/>

Live and Learn
<http://www.livelearn.org/>

Niue IWRM Website
<http://vainiue.gov.nu/>

NIWA
<http://www.niwa.co.nz/>

NZAID
<http://www.nzaid.govt.nz/>

Pacific ENSO Update
<http://www.soest.hawaii.edu/MET/Enso/>

Pacific Water Association
<http://www.pacificwaterassociation.org>

Pacific Water & Wastes Association (PWWA)
www.pacificwaterassociation.org

PI-GOOS
<http://www.pi-goos.org/>

SIDSNET
<http://www.sidsnet.org/>

SOPAC water
<http://www.pacificwater.org/>

SPC
<http://www.spc.int/corp/>

SPREP Pacific Adaptation to Climate Change
http://www.sprep.org/climate_change/PACC/index.asp

Stockholm International Water Institute
<http://www.siwi.org/>

The International Commission on Irrigation and Drainage (ICID)
<http://www.icid.org/>

UN-Water
<http://www.unwater.org/flashindex.html>

UNEP
<http://www.unep.org/themes/freshwater/>

UNESCAP
<http://www.unescap.org/>

UNESCO
<http://www.unesco.org/water/>

UNFCCC
<http://unfccc.int/2860.php>

UNICEF
<http://www.unicef.org/pacificislands/index.html>

USGS
<http://hi.water.usgs.gov/>

UN Habitat
<http://www.unhabitat.org/>

UNU
<http://www.inweh.unu.edu/>

USP
www.usp.ac.fj

Water Governance Facility
<http://www.watergovernance.org/>

WHO
http://www.who.int/water_sanitation_health/en/

WMO
http://www.wmo.int/pages/themes/water/index_en.html

World Bank
<http://www.worldbank.org/html/extdr/thematic.htm>

World Water Council
<http://worldwatercouncil.org/>

World Water Day
<http://www.worldwaterday.org/>

World Water Forum
<http://www.worldwaterforum5.org/>

WSSCC
<http://www.wsscc.org/>



We appreciate your contributions to future issues of the newsletter and we highly value your assistance in disseminating the information to others so that it reaches the widest possible audience.

If you would like to comment on any articles or submit stories on your activities, upcoming events, vacancies or recent reports for the next newsletter please forward them to SOPAC Division Water Communications Advisor Tiy Chung (tiy@sopac.org), or IWRM Technical Assistant Subhashni Raj (subhashni@sopac.org) at the Applied Geoscience and Technology Division (SOPAC).

Your feedback and inputs are most appreciated and we look forward to the next action-packed five years!

