

Caring for our Common Home

CARITAS STATE OF THE ENVIRONMENT
REPORT FOR OCEANIA 2015





Auki, Solomon Islands.

Caring for our Common Home

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... a true ecological approach **always** becomes a social approach; it must integrate questions of justice in debates on the environment, so as to hear **both the cry of the earth and the cry of the poor.**

Pope Francis, *Laudato Si'*, 2015, para 49.

Manaakitia te whenua, manaakitia te tangata
Care for the land, care for the people

ST FRANCIS DAY
4 OCTOBER 2015





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Cover photo: Cleaning up after cyclone Pam in Port Vila, Vanuatu on a Caritas Cash for Work programme. Credit: Crispin Anderlini.

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About this report

In 2014, Caritas Aotearoa New Zealand produced our foundational environmental report on issues affecting communities in Oceania. *Small yet strong: Voices from Oceania on the environment* drew on interviews with groups from our Caritas and Catholic networks to paint a picture of environmental changes and issues impacting the lives of people throughout the Pacific.

From this initial work, we identified five issues we will follow over future years. We will report on those issues in an annual *State of the environment in Oceania* report on St Francis' Day each year.

This work takes place against a backdrop of significant decisions affecting the future of our planet and its people. In June 2015, Pope Francis released his encyclical *Laudato Si'* on the care of our common home. During the final months of 2015, the international community is considering the global response to pressing environmental issues through the United Nations Sustainable Development summit in September, and the United Nations Conference on Climate Change in Paris in December.

Caritas Aotearoa New Zealand is the agency for justice, peace and development of the New Zealand Catholic Bishops Conference. We undertake advocacy, education, aid and development on both local and global issues affecting people in the Pacific, Asia, the Middle East and Africa.

We are a member of Caritas Oceania, one of seven regions comprising the Caritas Internationalis confederation of 165 Catholic welfare, development and social justice organisations. Since 2003, Caritas Oceania has raised environmental justice and climate change issues within our confederation as matters of urgency affecting the wellbeing of peoples in the Pacific.

Environmental justice is also one of five key strategic goals in the Caritas Aotearoa New Zealand 2013-2017 strategic plan. We recognise that climate change and environmental degradation pose a severe threat to Pacific livelihoods and survival. We are responding to these environmental issues through:

- building relationships with vulnerable communities and undertaking development and relief programmes;
- undertaking research to inform our response and practice;
- raising community awareness of environmental issues and climate change in Aotearoa New Zealand and Oceania; and
- advocating to address structural environmental issues.



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Taiwan TROPIC OF CANCER

Philippines

PHILIPPINE SEA

Guam

Northern Mariana Islands

Saipan

Marshall Islands

Federated States of Micronesia

Kolonia



Seven families have moved for fear of being washed away. ... The people have come to accept that this is the way it is.
MATHIAS IRE, PAPUA NEW GUINEA (P 29)



We are beginning to lose this connectedness to the islands we love, ... rising sea levels are basically forcing us to move from our homeland.
URSULA RAKOVA, CARTERET ISLANDS (P 31)

Banaba

Nauru

Indonesia

Papua New Guinea

Carteret Islands

New Ireland

New Britain

Solomon Islands

Bougainville

Honiara

TORRES STRAIT

Port Moresby



There's just no shelter, with so much having been blown away.
BISHOP JOHN BOSCO BAREMES, VANUATU (P 13)

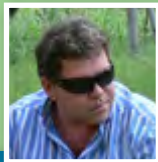
Vanuatu

New Caledonia

Port-Vila

Noumea

Australia



There are hotter and more frequent fires.
ROWAN FOLEY, AUSTRALIA (P 19)

Kingston

Norfolk Island



That night it just rained, it rained non-stop, and we knew that when the rain comes, the banks start sliding down.
ZENA HOUGH, HIRUHARAMA (P 18)

Canberra

Aotearoa New Zealand

Dunedin

Voices on the state of the environment in Oceania

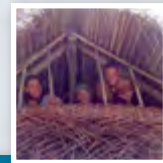
Hawaii



The sea wall has failed about three times now and we cannot keep up the hard work as the tides still destroy it.
RABAERE MATAI, KIRIBATI (P 27)



There were once many trees like that, but then the sea came in – they died.
NAMORIKI ROTITAAKE, KIRIBATI (P 33)



People are buying freezers and other electrical goods now. We just have to wait and see how much impact that has on the cultural side of things. PIO
RAVARUA, COOK ISLANDS (P 62)

Northern Cook Islands

Cook Islands

Southern Cook Islands

Rarotonga

Tahiti

French Polynesia



The sea is coming closer. ... When there is no more road here, there will be the seashore.
FR TANIELA 'ENOSI, HA'APAI, TONGA (P 33)



We need the support of all nations to deal with climate change immediately, it will be too late if we keep mucking around. FALA HAULANGI, TUVALU/AUCKLAND (P 30)



Our region is already experiencing the harsh consequences of environmental degradation ... further new extractive industries such as Deep Sea Mining are not the best strategy for economic development.
NOELENE NABULIVOU, FIJI (P 48)

Auckland

Hiruharama

Wellington

Christchurch

Chatham Islands

Introduction

Our common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us... This sister now cries out to us because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her. – LAUDATO SI', PARAS 1-2.

Two of the strongest cyclones to hit Oceania in recorded history struck this year, while heavy and unseasonable rainfall created havoc in other parts of our region. Beyond the headlines of such disasters, numerous small communities throughout our region continue to cope with the impact of changing weather, as well as disruptive changes to coast lines caused by rising seas and larger storm surges.

Incremental changes to food supplies and production have not yet caused large scale hunger, but food security in the Pacific is vulnerable to sudden shocks, and in many cases subsistence living is being replaced with dependence on imported foods.

While the world becomes more aware of the need to urgently reduce our dependence on fossil fuels, the seabed under the Pacific ocean is becoming the latest mining frontier.

And as climate-change-related aid becomes a billion dollar industry, and a range of projects are undertaken in the Pacific, Caritas continues to see that many vulnerable Pacific communities are untouched by this activity, and are left to battle by themselves on the front lines of rising sea levels.

In August 2015, the Federation of Catholic Bishops of Oceania expressed deep concern about rising sea levels, ocean acidification and unusual rainfall patterns. "These are affecting many of our communities in a harmful way. In some cases, entire regions and nations are under threat from the indisputable fact of rising sea levels," they said.

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A coconut grove killed off by sea inundation, Eita, Kiribati.



A Caritas Oceania regional forum in September 2015 emphatically endorsed the Bishops' statement, saying, "For us Oceania peoples, ... climate change is a daily struggle. For many of our Oceania countries it is a question of whether we remain on or leave our sinking homes. We face severe and multifaceted risks as a result of climate change. Our livelihoods are linked to the Pacific Ocean. Sea level rise and ocean acidification and other effects of global warming threaten our way of life – and even our national identities. For us it is a matter of life and death."

Earlier, in June, Pope Francis called on all of us who share the earth as our common home to urgently change the way we are living – as a global community, as national political communities, as households and as individuals. In his encyclical *Laudato Si'* he acknowledges climate change as a global problem which is one of the principal challenges facing humanity (para 25).

He asks: "What is happening to our common home?" and observes "symptoms of sickness evident in the soil, in the water, in the air and in all forms of life" (para 2). He comments on a lack of awareness of problems which especially affect the excluded (para 49) and asks us to look more closely at what is happening to our planet and its people. He notes "our goal is not to amass information or to satisfy curiosity, but rather to become painfully aware" (para 19).

It is in this spirit and this context that Caritas Aotearoa New Zealand presents our first State of the Environment report for Oceania. We identify some of the symptoms of sickness and wellbeing present in the soil, water and air of our region – on land and sea, as they affect people. We do not write this as scientific or environmental experts, but rather from the perspective of working with grassroots communities throughout Oceania in our development, humanitarian, advocacy and education work.

Following our foundational work, presented in our 2014 report *Small yet strong*, we have identified five key issues affecting people in the region which we will monitor in the coming years, in particular, how these issues are affecting the most vulnerable. These issues are:

- Impact of severe weather-related emergencies
- Coastal erosion and rising sea levels
- Access to food and safe drinking water
- Mining and drilling of the ocean floor
- Climate financing for Oceania's developing nations – to support both minimisation of greenhouse gas emissions (mitigation) and adaptation to climate change.

In this report, we provide an overview of each issue, including facts and statistics where available. We discuss the environmental trends and progress, and through both positive and negative case studies, explore the lived experience of communities in Oceania: what is affecting them and how they are responding. We particularly highlight throughout the report, the story of the Carteret Islands, offshore from Bougainville in Papua New Guinea. Their experience reflects many of the key issues facing small Pacific communities, and the call to each of us to participate in protecting our common home. Our own "Caritas indicator" gives a snapshot assessment for this year of how a particular issue is impacting people's lives – and what room there is for improvement.

Together with our partners in communities and programmes around our region, we share these stories and experiences, together with our assessments and recommendations. We look forward to being part of the debate and discussion that they will generate. We look forward to working with all who share the earth as our common home to continue to hear and respond to the cry of the earth and the cry of the poor.

2015: Summary of environmental impacts

Below is a summary of the five key environmental issues Caritas is monitoring each year for their impact on people and communities through our 'State of the environment report for Oceania'. It includes our snapshot assessment of how much each issue has impacted people's lives in Oceania in 2015.

Caritas
assessment of
the impact of
extreme weather
in 2015



Extreme weather

Oceania was hit hard by several severe cyclones in 2015, as well as unusual or intense events that cost lives and impacted communities. A trend of more and/or larger extreme weather events is consistent with climate change predictions. The poor are the hardest hit, while disaster losses in Pacific islands are high relative to the sizes of their population and economies.

Analysis of weather-related disasters in Oceania over 2014-2015 shows that while cyclone Pam in March 2015 was the most costly, a heat wave in Australia in January 2014 led to 139 deaths, while in August-September 2015, a very strong El Niño cycle was affecting two million people in Papua New Guinea alone.

Caritas
assessment of
the impact
of coastal
flooding and
erosion



Coastal erosion, flooding and rising sea levels

Low-lying Pacific islands such as Kiribati and Tuvalu experienced more frequent and stronger King tides in 2015, in addition to storms and cyclones. Coastal flooding affects about 6,000 people a year in Papua New Guinea, where Caritas partners reported widespread relocation of people due to coastal erosion and flooding. However, there is little comprehensive data on numbers of people affected in such ways around the Pacific.

Several New Zealand coastal cities in 2015 were also severely affected by extreme rainfall events combined with rising sea levels.

While there is often funding for repairs of major infrastructure, ordinary people in the Pacific are largely having to fend for themselves.

Global sea levels have risen 20 centimetres since 1900, and are expected to rise another 30 centimetres by 2050. This increases the impact of extreme events such as storm surges and King tides.

Caritas
assessment of
environmental
impacts affecting
access to food
and water



Access to safe, healthy food and water

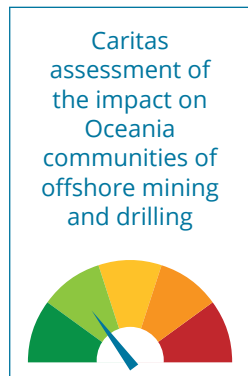
Climatic changes, overfishing, conversion of food production areas to other uses, and changes from traditional practices and diet are affecting people's ability to access safe and healthy food and water. However, current and comprehensive measures of food and water security are not available, or do not indicate accurately people's ability to access these basic human rights.

While food is usually in abundance, food security and water supplies are vulnerable to extreme shocks such as the current El Niño drought affecting large parts of the Pacific.

Water conservation and efficiency measures are not generally widely practised and there are pollution issues and wastage in some reticulated water schemes. Water supplies for coral atolls are particularly vulnerable.



There are generally declining yields from reef (coastal) fish, while deep sea fisheries are being overfished. Degradation of reefs is causing ciguatera poisoning and threatening other marine life.

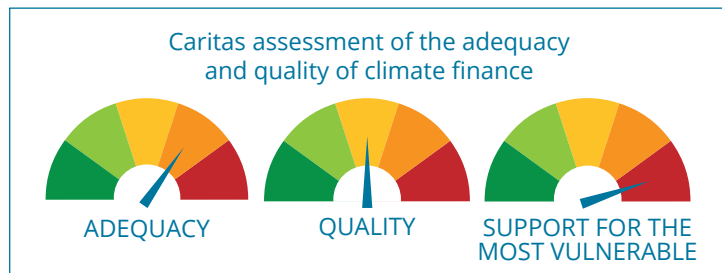


Offshore mining and drilling

The search for oil and gas continues offshore at ever-increasing depths, while the potentially lucrative offerings of seabed minerals will see the world's first seabed mine open in Papua New Guinea in 2018. Indigenous peoples in Papua New Guinea and Aotearoa New Zealand have voiced opposition to such exploration on the grounds of environmental protection, community impacts and customary ownership.

More than 1.5 million square kilometres of Pacific Ocean floor has been licensed for seabed mining exploration – in both national jurisdictions and in international waters through the United Nations International Seabed Authority.

The Deep Sea Minerals Project is developing legislation for 15 Pacific Island countries. Community consultations have shown-up concern about a lack of reliable, independent information about the impacts of deep-sea mining.



Climate finance – who's benefiting?

Measuring climate finance flows is difficult, in Oceania as around the world, due to complex finance channels and no clear definition of what is 'climate finance' – which is supposed to support reduction

of greenhouse gas emissions and adaptation to climate change. Priorities for funding are largely driven by donors rather than needs on the ground.

Caritas analysis of the New Zealand government's climate financing over 2012-2015 suggests that half of it is supporting 'business as usual' type development or repairing the damage caused by disasters, rather than actively building for a low-carbon, climate resilient future.

Key recommendations

The world community must negotiate a strong, global climate agreement in December 2015 that aims to keep the global temperature increase below 1.5 degree Celsius; provides a framework for adaptation that supports the most vulnerable; and provides clarity and commitment on climate finance.

Oceania governments must strengthen carbon emission targets and provide pathways to achieve them; invest in renewable energy, rather than encourage fossil fuel exploration and extraction; and have regulatory regimes for offshore mining and drilling that allows full consultation and effective monitoring of impacts.

Governments, international bodies and civil society need to develop Sustainable Development Goal (SDG) indicators for the Pacific that take into account the Pacific environment, cultures and values.

Local groups, families and individuals must actively participate as local and global citizens in making their views known to decision-makers; support environmental projects; and develop daily habits of ecological citizenship, such as reducing unnecessary consumption, planting trees, and showing care for other living beings.

Frère from Port Vila, Vanuatu. Within days of Cyclone Pam hitting Vanuatu, he was back making a living by selling to tourists photos of themselves with his iguana.





CARITAS INDICATOR

Our assessment of the impact of extreme weather in Oceania 2015

Read more on page 23

1 Hitting hard: extreme weather

Many of the poor live in areas particularly affected by phenomena related to warming, and their means of subsistence are largely dependent on natural reserves and ecosystemic services such as agriculture, fishing and forestry. They have no other financial activities or resources which can enable them to adapt to climate change or to face natural disasters, and their access to social services and protection is very limited. – LAUDATO SI', PARA 25.

In 2015, 'super-cyclones' such as Pam in March and Soudelor in August, as well as intense rainfall events and unusual sea swells have highlighted the dangers posed by extreme weather in Oceania – expected to increase in severity and number as the climate changes. Emergency preparedness, high-tech predictions and traditional practices all played their part in helping people survive and get back on their feet this year, but as we face more extreme and less predictable weather, what do we need to do, and will people cope?

One ocean, one storm, many people

"In Port Vila the destruction is everywhere, and there's no news from anyone around the islands yet," said Catholic Bishop of Port Vila John Bosco Baremes SM, when cyclone Pam hit Vanuatu on 13 March 2015. "There's just no shelter, with so much having been blown away, and people will need somewhere to shelter while they rebuild."

Far from Pam's centre, Kiribati still had sea walls damaged and houses flooded by high waves generated by the super-cyclone. Caritas researcher Cathy Bi was visiting Kiribati at the time: "I saw lots of people rebuilding the sea walls around their houses. Several trees had simply disappeared into the ocean, huge chunks of road had collapsed into the sea and the Betio

causeway (connecting Betio with the neighbouring islet of Bairiki) had been severely damaged in several areas, exposing wires and pipes. People were passing sandbags to try and stabilise the causeway."

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Sandbagging a hole in the Betio causeway, Kiribati eroded by waves from cyclone Pam.



Oceania overview

Cyclone Pam was only one of a number of super-cyclones to hit Oceania in 2015, including two of the strongest in recorded history. As this report goes to print, a severe El Niño cyclical weather pattern threatens further strong cyclones for the southern hemisphere summer, and has already damaged food and water supplies (see chapter 3).

Cyclone Pam (March 2015) was the South Pacific's second most intense storm after Zoe (2002), and had the highest 10-minute sustained wind speed of any recorded South Pacific cyclone.

Cyclone Soudelor (August 2015) was the worst storm in 30 years to hit the Northern Marianas, a United States territory in northern Micronesia. Soudelor forced 500 people into emergency shelters, and cut power for several weeks on the main island of Saipan. Water and wastewater services were also affected.

The Federated States of Micronesia were affected by super-cyclone Maysak (March 2015), while unusually heavy rainfall in Solomon Islands, Papua New Guinea and Aotearoa New Zealand resulted in fatalities at other times of the year.

Disaster losses in Pacific islands are very high relative to the sizes of their population and economies. Eight Pacific island countries are among the 20 countries in the world with the highest average annual disaster losses by Gross Domestic Product (GDP). The Vanuatu government estimates cyclone Pam caused \$US390 million of damage: 47 per cent of GDP.¹ By contrast, the Canterbury earthquakes caused Aotearoa New Zealand about NZ\$40 billion of damage or 20 per cent of New Zealand's GDP.

Table 1 (page 16) illustrates the impact of the most severe weather-related events to hit Oceania for January 2014–August 2015. While mainly storms, cyclones and floods, they include an Australian heat wave that killed 139 people.

Cyclone activity can vary significantly over long periods of time, but the proportion of cyclones that are very strong has increased in the South Pacific region as a whole: consistent with more energy in the oceans from global warming.

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A local woman surveys the destruction at a waterfront market in Port Vila, Vanuatu after cyclone Pam hit.

¹ World Humanitarian Summit: *Regional Consultation – Pacific Region: Scoping Paper*, June–July 2015.

Cyclone Pam packs a punch in southwest Pacific

Cyclone Pam in March 2015 was the worst cyclone to hit Vanuatu in living memory. It affected 166,000 people on 22 of Vanuatu's islands – 70 per cent of the population. About 15,000 homes were destroyed or damaged, and 75,000 people needed emergency shelter. In the southern island of Tanna, about 90 per cent of homes were lost.

Further east, seven of Tuvalu's islands were severely flooded by storm surges and sea swells. It caused damage to shelter, infrastructure, food crops, livestock, and water and sanitation. High winds and sea surges damaged islands in Kiribati, while 30,000 people were affected in Solomon Islands. Papua New Guinea and Fiji were also badly affected, as were northeastern parts of Aotearoa New Zealand, while the Chatham Islands had wharves damaged that are vital to supply lines and livelihoods.

Despite Pam's extreme ferocity, only 11 people died – testament to the preparedness of Vanuatu locals and the value of early warning. But measuring the impact of a disaster by the number of deaths ignores the hidden and long-term costs of the devastation wrought by super-cyclones, especially in smaller Pacific islands.

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Caritas supported the initial cyclone response, mainly in food and shelter relief. "What struck me most about the situation was the resilience of the people," said Caritas Humanitarian Programmes Coordinator Mark Mitchell. "It's an emergency and this is what we do, we help each other," said Jake from Rango Rango village.

Putting a tarpaulin in place at Rango Rango on Efate, Vanuatu.

Mobile phones, advanced weather monitoring and internet communications warned people of impending disaster, while emergency preparedness training and traditional practices also helped them survive. Some traditional cyclone shelters have no windows, very low doors (so you need to bend over to enter), and thatched roofs dug into the ground, while some people sought safety in caves.²

However, the Vanuatu people had never faced anything like cyclone Pam before, and such cyclones are becoming more likely as a result of climate change. Severe cyclones mean longer recovery times – sometimes lasting years. Cyclone Ofa in 1990 turned Niue from a food exporter to dependency on imports for two years, while severe storm flooding in Pukapuka in the Cook Islands took out food production areas for three years.

² Stephen Coates and Lincoln Feast: "Vanuatu islanders adopt well-honed survival techniques", Reuters, 18 March 2015.

Table 1: Impact of severe weather-related disasters in Oceania: January 2014 – August 2015.

Date	Event	Location	Deaths	Displaced	Total affected	Total Damage (US\$ million)
January 2014	Heat wave	Victoria, Australia	139			
January 2014	Flash flood	Perth Hills, Australia	2		168	25
January 2014	Cyclone Ian	Haapai and Vavau, Tonga	1	2,335	5,000	31
March 2014	Storm	Canterbury, lower North Island, NZ				15.8*
March 2014	Cyclone Lusi - flood & wildfire	Vanuatu	12	149	20,000	0.6
March 2014	King tides	Marshall Islands		940	1,730	3.1
March 2014	King tides	Marakei, Tarawa, Kiribati			220	
April 2014	Prolonged heavy rain and floods	Solomon Islands	22	10,000	52,000	24
April 2014	Cyclone Ita	Papua New Guinea			12,346	
April 2014	Storm & floods	New Zealand				38.7*
June 2014	Severe weather	New Zealand				26.3*
June-July 2014	Tropical cyclone	Gulf province, Papua New Guinea				
July 2014	Storms	Northland, Coromandel, NZ			27,000	13.2*
November 2014	Convective storm	Brisbane, Australia			52,539	1,000
January 2015	Bushfire	Adelaide, Australia			479	
February 2015	Cyclone Lam	Northern Territory, Australia			438	78
February 2015	Cyclone Marcia	Queensland and New South Wales, Australia		4,500	233	
March 2015	Cyclone Pam	Vanuatu, Tuvalu, Kiribati, Solomon Islands and others	11	4,350	225,600	38,000
March 2015	Cyclone Pam	Tuvalu		350	4,600	
March 2015	Cyclone Pam	Kiribati			2,000	
March 2015	Cyclone Pam	Solomon Islands			30,000	
March 2015	Heavy rain & floods	Papua New Guinea			20,000	
March 2015	Cyclone Maysak	Federated States of Micronesia	5	1,500	29,700	
April 2015	Storm	New South Wales, Australia	4	1,000		785
May 2015	Extreme weather	Lower North Island, NZ				11.8*
June 2015	Storm & floods	Lower North Island, NZ				82
June 2015	Storm & floods	Otago, NZ				20*
July 2015	Cyclone Raquel	Solomon Islands			20,000	
August 2015	Cyclone Soudelor	Northern Marianas			540	20
August 2015	El Niño - drought, frosts	Papua New Guinea, Fiji, Tonga, Vanuatu, Solomon Islands	14		2,000,000	

(Sources: EM-DAT, UN OCHA, Relief Web, Insurance Council of New Zealand. Data are not available on all attributes.)
 * = insurance costs alone. \$NZ converted to \$US at average exchange rate of NZ\$1 = \$US0.7

- 1 EM-DAT – the International Disaster Database run by Centre for Research on the Epidemiology of Disasters (CRED) at University of Louvain, Brussels, Belgium.
- 2 United Nations Office for the Coordination of Humanitarian Affairs

Heavy rain takes children's lives in Papua New Guinea

Unusually heavy rainfall in Papua New Guinea in March 2015 highlighted the risk that extreme weather poses for the poorest and most vulnerable in particular. Intense rain over several days caused severe floods and landslides across six provinces, killed seven people and affected at least 100,000. Following no known weather pattern, it also destroyed roads, bridges and power lines, and wiped out crops.

The residents of Polga village in Jiwaka province were among the worst hit. A young mother and her three children, along with two other children, died when the Lel river burst its banks in a flood surge. Caritas Coordinator for the Mt Hagen Diocese Jenny Mek said it was the worst-ever disaster for the villagers. "The flood came with a sudden rush as high as 5-6 metres above normal," she said. "The Lel river has been a source of life for many, but now it has become their enemy."

A survivor, Lucy Nikints, told how the flood hit as she and her children were eating pandanus fruit in the late afternoon. "We were busy eating while the sudden flood came by surprise and we were helpless. ... I grabbed the children and hold onto them ... I was confused, I didn't know what happened next, the flood took us, and kids disappeared from my hands. I was unconscious struggling with the flood, but could hear my daughter (Bernadette) crying under the floodwater, maybe she is dead and her soul crying for help, I couldn't think properly."

Lucy's seven-year-old daughter Bernadette was among those who died.



Villagers from Polga point to where two of the drowned children were found.

Out of action – River Road in the Whanganui floods

Whanganui in Aotearoa New Zealand suffered its worst-ever floods in early June 2015, during a storm that ripped through the country from Otago to the North Island. Though no lives were lost, it caused an estimated \$120 million damage in the Manawatu-Whanganui area, and continues to have long-term repercussions, especially in isolated areas.

It closed parts of the River Road north of Whanganui township, and two months after the storm, the road south of Hiruharama (Jerusalem) was still frequently being closed by slips after rain; while the road north to Raetihi was not expected to re-open until late November due to a washout.

Resident Zena Hough, who works at the Sisters of Compassion convent in Hiruharama, recounts her family's efforts to go to Wellington in August to sell hangi food: "That night it just rained, it rained non-stop, and we knew that when the rain comes, the banks start sliding down, and there was still real loose stuff on the banks. There were slips on the road that we had to walk over. So we drove up to the slip, and there was another vehicle on the other side, so we got them to drop us off first at Matahiwi, and then we asked to borrow their vehicle to go to Wellington."

Zena remembers severe floods and slips from a February 2004 storm that ravaged the lower North Island, but that didn't create an ongoing situation of recurring slips blocking the road. "This time round, it's worse." In the initial aftermath of the June 2015 storm, telephone lines were down and the road closed for three weeks, stopping children from attending school.

Table 2: The cost of severe weather in Aotearoa New Zealand.

Date	Event	Cost (NZ\$ million)
23-Feb 2014	Canterbury storm	4.8
4-5 Mar 2014	Canterbury and lower North Island storm	22.5
15-16 Mar 2014	Cyclone Lusi	3.6
17 April 2014	Easter weekend storm and floods	55.3
9-11 June 2014	Severe weather – North and South Islands	37.6
25 June 2014	Nelson-Tasman floods	2.7
8-10 July 2014	Northland-Coromandel storms	18.8
4 November 2014	Hailstorm – North and South Islands	4.9
6-7 March 2015	Flooding and storm – North and South Islands	1.25
15-18 March 2015	Cyclone Pam	1.45
13-15 May 2015	Extreme weather – lower North Island	16.8
14 May 2015	Bay of Plenty tornado	2.07
2-4 June 2015	Flooding and storm – Otago	28.6
2-5 June 2015	Flooding and storm – North and South Islands, excluding Otago	1.7

(Source: Insurance Council of New Zealand.)

This table shows total insurance claims of \$197.27 million for weather-related disasters in Aotearoa New Zealand from January 2014 to June 2015. While useful for comparing the relative financial impact of different disasters that have affected Aotearoa New Zealand, it doesn't show the full financial cost of damage that is not covered by insurance. Neither does it show other impacts and indirect financial costs, such as disruption to school and work attendance, or lost hours of work productivity.

Facing the heat in Australia

Weather-related disasters in Oceania are not only about storms. Dry weather in parts of Australia and New Zealand can lead to potentially catastrophic bushfires. Bushfire scientists predict severe bushfires will threaten life and property more in future, due to higher temperatures and reduced rainfall, and more people living in high-fire-risk areas.

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Rowan Foley (left) is from the Wondunna clan of the Badtjala people in Queensland and General Manager of the Aboriginal Carbon Fund (ABC), a carbon credit scheme providing social benefits to Australia's indigenous peoples.

"There are hotter and more frequent fires," says Rowan. "Salt water intrusion is leading to less fresh water. This is impacting on indigenous traditional owners of the land, who have contributed the least to global warming."

In response to this, and in partnership with Caritas Australia, the ABC supports a fire-management programme that incorporates traditional practices to prevent hot summer fires.

"Over the last 40,000 years, the traditional owners in Australia actively managed the land, by making small fires in winter. This prevents very hot late-season fires," says Rowan.

"We're expanding on the same practices now. For example, there's the Oriners Forest Fire Management Program in Kowanyama near Cape York. ...When it's cold, that's the time to light fires. Then you only produce a little amount of carbon (greenhouse gases) that will go into the atmosphere. If we just let things take their course, all that grass and vegetation on the ground would build up as fuel, and when the hot times come in November, we'd have big wildfires running across Cape York, burning out the region and its neighbours."

The Government or companies can buy the carbon emission reduction gained by burning in winter as a carbon credit offset. The Kowanyama project also gives traditional owners access to "bush tucker" and other resources.

"It gets families and clans together," says Rowan, "and helps with maintaining traditional knowledge and a healthy lifestyle. It provides for better management of country. And it strengthens people's connection with country."



CARITAS AUSTRALIA

Controlled burnoff.



Mother Nature or climate change?

The string of extreme weather events across Oceania in 2015 may create the impression that our weather is worsening – but is it? And is anthropogenic (human-caused) climate change to blame?

Figure 1 below indicates that the number of weather or climate-related emergencies has increased worldwide since 1960. Oceania is no exception: though Figure 2 includes some non-weather-related disasters, and the number can vary widely from year to year, there is an overall upward trend in weather-related ones since the 1970s.

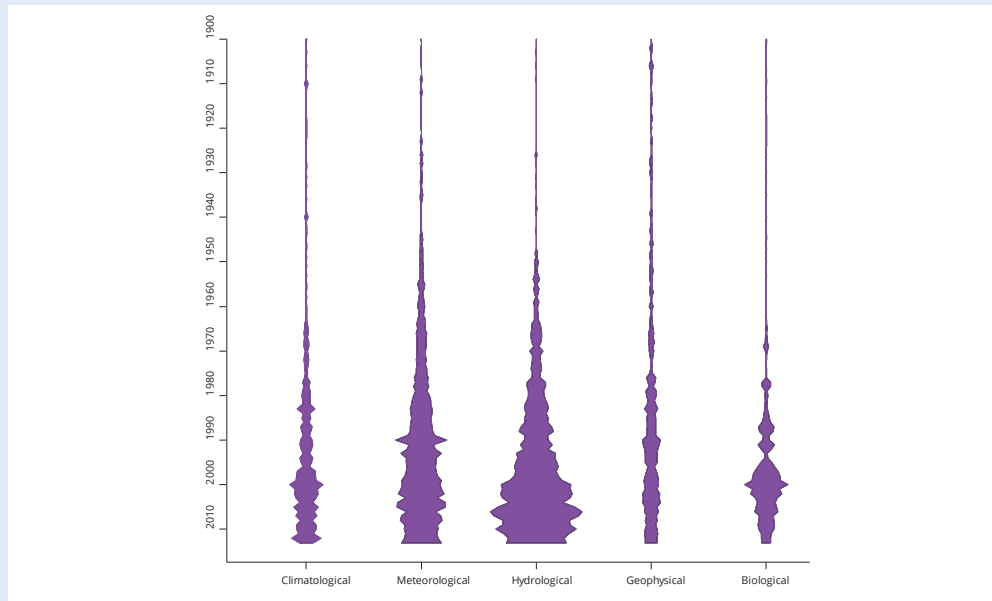


Figure 1: Number of natural disasters reported worldwide, 1900–2013.
The three columns on the left represent events classed as:
climatological = droughts, rising sea water, bushfires;
meteorological = cyclones, storms, wave surges;
hydrological = water-on-land events, such as floods and avalanches.

(Source: EM-DAT³.)

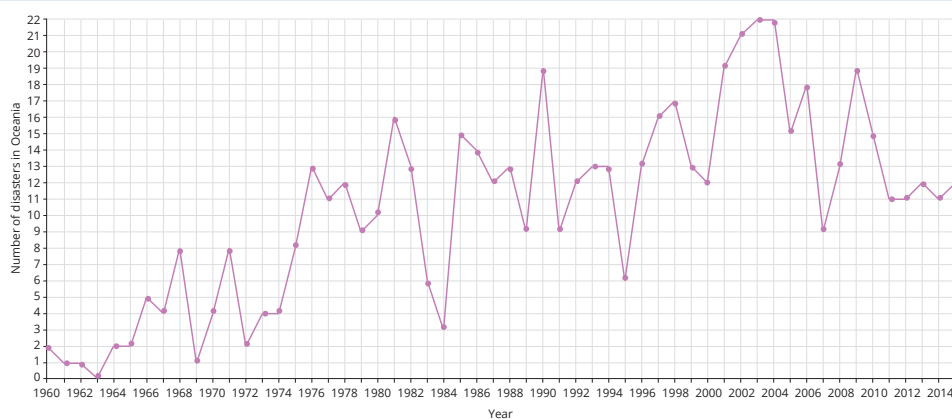


Figure 2: Number of natural disasters 1960-2015 in Oceania (number for 2015 is to September only)

(Source: EM-DAT³.)

3 EM-DAT – the International Disaster Database run by Centre for Research on the Epidemiology of Disasters (CRED) at University of Louvain, Brussels, Belgium.



While no particular weather-related event can be attributed directly to climate change, the trends of more and/or larger extreme events is known to be consistent with trapping more heat in the atmosphere and oceans. This is increasing the risk of more frequent and intense hydro-meteorological events: floods, bushfires, drought, heatwaves and tropical cyclones.

About 70 per cent of disasters are climate related. This is up from 50 per cent two decades ago, according to the United Nations Office for the Coordination of Humanitarian Affairs.⁴ In addition, extreme heatwaves and intense rain storms are happening more frequently due to human-induced climate change.⁵ Some extreme events are also occurring out of season. For example, the emergence of cyclone Raquel in July 2015 near the Solomon Islands was well outside of the normal cyclone season.

Other human modifications to the environment increase the impact of extreme weather. For example, removal of coastal mangroves, extensive logging or people settling in areas where there are more natural hazards.

A 'disaster' usually happens where there is some level of vulnerability. As weather-related disasters increase, "those that are poor will be the hardest hit and least able to cope" – including the disadvantaged in richer countries, according to Dale Dominey-Howes, Associate Professor in Natural Disaster Geography at University of Sydney.⁶

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Cyclone Pam affected Kiribati with high winds and storm surges.

4 UN OCHA website: <http://www.unocha.org/what-we-do/advocacy/thematic-campaigns/climate-change/threats-solutions>.

5 E M Fischer and R Knutti in *Nature Climate Change* (April 2015).

6 <https://theconversation.com/explainer-are-natural-disasters-on-the-rise-39232>.



The future

Many small island states face disproportionately high future losses, and even a threat to their existence. “Climate change, combined with poverty and exposed infrastructure and housing, will lead to a significant increase in economic losses due to increased wind damage and sea-level rise,” says Head of the United Nations Office for Disaster Risk Reduction Margareta Wahlström.

An article in *Nature Climate Change* in April 2015⁷ predicted that, if global temperature rises to 2°C above pre-industrial levels, the probability of extremely hot days is more than five times higher than for the present-day. Not only will extreme events be more frequent, there will be longer droughts, more sustained heat waves and extended rainy periods. Weather events at the equator will also become more extreme.

However, under current carbon emission trends, the world is on track for a global temperature rise of 4.5°C above pre-industrial levels by 2100.⁸

Pacific communities have predicted weather and climate for hundreds of years by observing plant and animal behaviour, temperature, rainfall, and astronomical indicators. Such traditional knowledge is valuable and being incorporated into Pacific island meteorological services to produce integrated and more readily understood forecasts for local communities. But as we enter a new and less predictable climatic future, will such traditional knowledge still be viable and able to inform people?

Problems will become more serious as extreme events pile on top of each other – new events occurring before recoveries from earlier ones. As the frequency of extreme events increases, people’s natural resilience will be taxed unless recovery processes are well managed and supported.

In a world first, the Pacific Islands Forum in September 2015 approved the new Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP). This aims to guide government, private sector, civil society and international organisations, as well as communities, in an integrated response to climate change and disaster planning.

Conclusion

We have assessed the impact of extreme weather in Oceania in 2015 as ‘severe’. The past year has seen several ‘super-cyclones’ impacting a wide area of Oceania, as well as some lesser events that were unusually intense or out of season. Even these smaller events have had a big impact on affected communities – including deaths from intense rainfall events in Papua New Guinea and Aotearoa New Zealand.

As this report was going to print, a particularly strong El Niño weather cycle had already led to deaths in Papua New Guinea, and affected millions.

Some events have followed consecutively on top of each other – such as drought and frost in Papua New Guinea highlands that experienced intense rains earlier in the year; and long-term drought affecting Vanuatu and Solomon Islands after being hit by cyclone Pam.

7 E M Fischer and R Knutti: “Anthropogenic contribution to global occurrence of heavy-precipitation and high-temperature extremes”, *Nature Climate Change*, April 2015, pp 560-564.

8 Intergovernmental Panel on Climate Change (IPCC): *Fifth Assessment Report*, 2014.



CARITAS INDICATOR

Our assessment of the impact of extreme weather in Oceania 2015

■ LOW
 ■ MODERATE
 ■ HIGH
 ■ SEVERE
 ■ EXTREME

Recommendations

- The world community must negotiate a binding, global climate agreement at the United Nations climate conference in Paris in December 2015 that:
 - supports strong, coordinated mitigation measures to ultimately keep the global temperature increase below 1.5°C relative to pre-industrial levels.
 - promotes a framework for adaptation for communities already affected by climate change, that supports the most vulnerable. Adaptation measures must involve and build on local knowledge and mechanisms.
- National governments in the region, donor countries and funding bodies must ensure sufficient financial and logistical support to implement fully and effectively the new Strategy for Disaster and Climate Resilient Development in the Pacific.
- Developed countries supporting aid in the Pacific, particularly Australia and New Zealand, need to progressively increase their funding for climate change mitigation, adaptation and disaster risk reduction in the Pacific, and target the most vulnerable communities.
- Weather forecasts and disaster information need to be provided in easily accessible and readily understood forms.
- Individuals and local communities in Oceania who are able to, need to take responsibility for minimising their own carbon emissions and ensuring their own emergency preparedness suitable for their circumstances.

The Carteret Islands: Extreme weather

The Carteret Islands, off the coast of Bougainville in eastern Papua New Guinea, are actually one atoll consisting of six islets. They are home to 2,700 people. Unusual and severe weather patterns are impacting their way of life and survival. Ursula Rakova is Executive Director of Tulele Peisa (“Sailing in the wind on our own”), a home-grown community organisation helping Carteret Islanders adapt to a changing environment.

“The weather patterns are changing so much,” says Ursula.

“Previously the islanders were able to tell when the strong winds were coming. Now it’s more frequent, it’s almost regularly, like right now, this isn’t the time for the strong winds,” she said in July.

The small “banana boats” that ferry people to the Carterets are supposed to carry up to 10 people with cargo, but are often overfilled with up to 25 passengers. In unusually heavy seas in July, one boat carrying seven passengers capsized. Both the captain and assistant were lost, while the survivors floated for two days on wooden pallets before being found.



Locals have seen this shipwreck progressively wash further inshore at Betio, Kiribati - it finally breached the sea wall in the spring tides of March 2015.





CARITAS INDICATOR

Our assessment of the impact of coastal erosion and sea inundation in Oceania 2015

Read more on page 31

2 Rising tides: coastal erosion, flooding and rising sea levels

The human environment and the natural environment deteriorate together ... rises in the sea level mainly affect impoverished coastal populations who have nowhere else to go. – LAUDATO SI, PARA 48.

Rising global seas since 1900 have already caused many people in the Pacific to move further inland or to other islands, but no one is keeping track of the numbers. Extra carbon dioxide and greenhouse gases that humans have already pumped into the atmosphere are set to raise sea levels another 30 centimetres by 2050. Who is helping Pacific island communities on the edge cope with these changes, and who will welcome those forced to leave their island and coastal homes?

Coastal flooding – “It’s part of their life”

“People really want to live next to the sea,” says parish priest of Abaiang Fr Buutonga Nakuau. “In fact they don’t want to move. It’s like they are ok with the flood now. They know that when the high tide is coming they start to take all the things and put [them in] high places. For them, it’s now part of their life.”

Abaiang is an atoll in Kiribati, and home to 16 villages. It is the atoll worst affected by regular coastal flooding and erosion. The village of Tebunginako gets flooded every high tide.

Most people live in traditional wooden houses with thatched rooves. When they are damaged or destroyed by the sea, people just build another house. “People are used to having to rebuild – they help each other,” says Fr Buutonga.



But the people of Tebunginako realise they need to move and are searching for land elsewhere on Abaiang. The government will pay for the maneaba (meeting house), but the village will need to get the money to buy the land – money they don’t have.

An abandoned home on Abaiang, Kiribati.

Oceania seas on the rise

Average sea levels around the world have risen 20 centimetres since 1900 according to the United Nations' Intergovernmental Panel on Climate Change (IPCC). Extra energy from global warming is entering the sea and expanding its volume, while meltwater from land-based glaciers and ice sheets is contributing at an increasing rate. Current sea level rise is about three millimetres a year.

However, sea levels also vary regionally due to long- and short-term weather patterns, and the gravitational attraction of large land bodies. Sea levels in parts of the tropical western Pacific, for example, rose up to 12 millimetres a year (four times the global average) from 1993 to 2009⁹ – probably associated with the cyclical El Niño effect.

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Wide impact: storm waves generated by cyclone Pam breaking at Teaoaereke, Kiribati in March 2015.

A rising sea level does not just mean a higher 'mean high water mark'. It also means extreme events such as storm surges and spring tides will be worse and happen more often. Such events on top of an overall higher sea level are the main threats to the habitability of low-lying islands as sea levels continue to rise.

Kiribati and Tuvalu are among the Pacific island nations becoming acutely affected by this.

"The atolls of Kiribati are experiencing increased wave heights and frequency and we can see that this is placing increased pressure on the shoreline and seawalls," says the Kiribati government website. "Storm surges occur far more often than in the past."

Kiribati suffered severely from storm surges associated with cyclone Pam, but King tides – far more than usual – have also taken their toll in 2015. In February, a particularly damaging King tide forced patients from the main hospital in Betio on south Tarawa.

Other nations such as Papua New Guinea and Aotearoa New Zealand are also feeling the impact of more coastal erosion and flooding, particularly in the last 10-20 years.

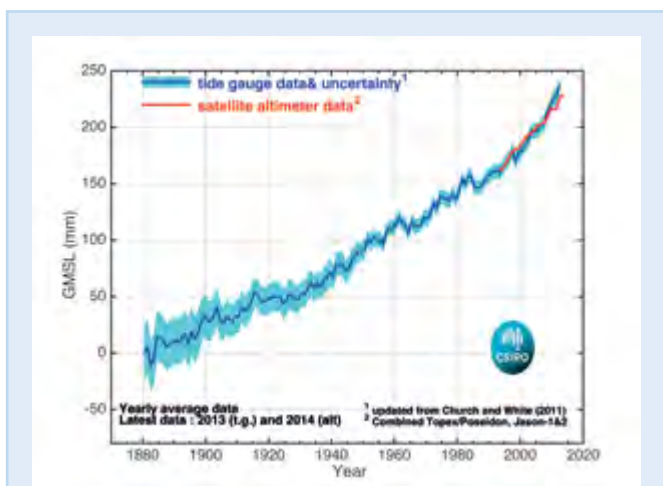


Figure 3: Estimates of changes in global average sea level since 1880. Satellite data supplements coastal tide gauges since 1993 (red curve).

(Source: Australian Commonwealth Scientific and Industrial Research Organisation.)

9 IPCC: *Fifth Assessment Report*, 2014.

Kiribati: King tides too much for traditional sea wall

Cyclone Pam and multiple King tides this year proved too much for a sea wall protecting Rabaere Matai's home opposite the Catholic Diocesan Centre in Teaoraereke, Kiribati. Here he is rebuilding the wall after cyclone Pam in March. "The storm caused severe damage to our sea wall," says Rabaere. "That time was unreal because it was low tide and all of a sudden the sea was high within 30 minutes. This was the first time that the sea wall had been broken. It was built by an Abaiang man who knew what he was doing and made the wall strong by placing large rocks in the corners."



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But subsequent very rough King tides have taken their toll this year. "The sea wall has failed about three times now and we cannot keep up the hard work as the tides still destroy it," he said in August. "Now our toilet and shower block is leaning into the sea too. I have decided to put in a stronger sea wall of cement and construct a small wharf for my boats for mooring."

He says the government only looks after public sea walls, not private ones like his.

Tokelau: 100 per cent renewable in the face of rising seas

Tokelau, with its close association with Aotearoa New Zealand, consists of three small atolls north of Samoa totalling about 12 square kilometres in land area, and is home to about 1,400 people. Since 2012, it has been generating 100 per cent of its electricity from renewable sources – mainly solar-power. But it can't do anything about rising seas generated by carbon emissions from the rest of the globe.

Fr Oliver Aro is the Catholic parish priest. In recent years, the sea has breached sea walls and damaged cemeteries. In the first few months of 2015, he said the community on Nukunonu atoll experienced higher seas on the lagoon side which pulled a dinghy into the sea. High seas also eroded land in the cemetery of Fakaofu atoll. When cyclone Pam hit in mid-March, "we experienced again the rise of the strong waves from the ocean which came inland. It uprooted some coconut trees and other plants. It also brought a lot of rubbish and stones ashore."

Peato Iosefo is a Tokelau Islander resident in Titahi Bay, Aotearoa New Zealand. When he visited Nukunonu this year, he was surprised to see the channel between the main village (Nukunonu) and the smaller village of Motuhaga, had widened from ongoing storms and King tides. In the last decade, the government has been installing sea walls made from local sand and rock, and cemented together. But parts of Motuhaga do not yet have a sea wall. "So the sea has eroded the land," says Peato. "It has affected the coconut and pandanus trees – you can see the roots of the trees. It will get to the point of falling down." And despite more imported foods, the population still relies for sustenance on coconuts and the pandanus fruit – 'fuifala'.

Eating away our land

Caritas partners in three very dispersed parts of Papua New Guinea report widespread coastal erosion and flooding, especially from storm surges and King tides.

"People are losing villages and moving to higher ground," says parish priest Fr John Bosco of Tinputz, northern Bougainville. While village authorities are encouraging people to plant more resilient crops and there is some instruction on the effects of climate change, in general, "people are confused and lack leadership on what to do."

Bougainville Diocesan Caritas Coordinator Fr William Satsie says land has eroded 30-50 metres in some areas of the mainland. Trees fall, soil is washed away, and wetlands are in danger of being lost. Even cemeteries have been washed away. The Autonomous Bougainville Government has initiated mangrove planting, and given some instruction on building sea walls. However, it has given little support to the relocation of Carteret Islanders.

Coastal flooding affects about 6,000 people a year in Papua New Guinea. While the northern coast from Vanimo to Lae, including offshore islands, has been identified as the area of greatest risk,¹⁰ the experience of Caritas' partners shows that the challenge is more widespread. In July, Kaigabu Kamnanaya of Papua New Guinea's National Disaster Centre said the country urgently needed a "whole of country inclusive policy" on populations affected by or vulnerable to environmental disasters, including permanent inundation from rising sea levels and other climate variability.¹¹

Though numbers are uncertain, many thousands of people on small islands around the Pacific are experiencing ongoing coastal erosion and more frequent inundations. It prompted the Federation of Catholic Bishops Conferences of Oceania in August to say, "In some cases, entire regions and nations are under threat from the indisputable fact of rising sea levels." They specifically named the Carteret, Fead, Mortlock and Nukumanu Islands of Papua New Guinea; as well as Kiribati, Tuvalu, the Marshall Islands, and Tokelau Islands.

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Carteret Island girls whose families have relocated to Tinputz, Bougainville.

¹⁰ *Climate Compatible Development Strategy and Interim Action Plan*, as reported in PACCSAP: PNG LiDAR Factsheet.

¹¹ *DRM Discussions in PNG*, Focus #09, 7b July 2015.

Papua New Guinea: Villages on the move



Mathias Ire (left), Caritas Coordinator for Kimbe Diocese in West New Britain, says erosion has become widespread along the north Coast of New Britain Island and some parts of the south coast, particularly in the last decade. In West Nakani, the coastline has moved 100-200 metres inland. His village of 500 people is among three of the worst affected coastal villages, where the sea is slowly carving into the main road.

Residents first noticed large-scale erosion about 15 years ago. After a few years, the sea began cutting into occupied land, so people closest to the beach moved inland.

“So far, seven families have moved for fear of being washed away,” says Mathias. “Their movement affects community life and how they organise and do things. When they move to new areas, they have to adjust to their new environment and they miss the community where families have closer ties with each other and assist each other in times of need. The people have come to accept that this is the way it is.

“We are concerned about our village being eroded but there is nothing much we can do. Sea walls are too expensive. We will keep moving inland but for how long?

“Problems also arise when the Government tries to relocate roads and in the process destroy economic trees such as coconuts and cocoa. Sometimes people are asked to move their houses to make way for road construction, but there can be problems with land ownership.”

The challenge of rising seas in Aotearoa New Zealand

In May-June 2015, a number of Aotearoa New Zealand coastal cities experienced extreme rainfall events combined with rising sea levels. Whanganui suffered its worst-ever flooding in early June (see chapter 1). On a calm sunny day in mid-June, a severe low depression southeast of the North Island, generated huge swells that threw rocks onto roads in Wellington, closed some coastal roads and nearly swept a toddler out to sea in the Wairarapa.¹²

Central government in New Zealand has given guidelines on the level of sea-level rise that local government should plan for, and its coastal policy lists sea-level rise among hazards to consider in planning. However, individual councils are responsible for deciding specific action in their area, so the response of local bodies has varied widely.¹³

In Aotearoa New Zealand, Parliamentary Commissioner for the Environment Dr Jan Wright says sea-level rise will have “significant and certain” impacts of erosion and more frequent flooding in low-lying coastal areas. This will affect private property, so local government needs to prepare for higher costs from damage and threats to infrastructure, as well as legal battles with coastal homeowners concerned about property values.¹⁴

12 Caleb Harris, “Rogue Riversdale wave sweeps baby into sea after bowling Wellington family”, 15 June, 2015 (at <http://www.stuff.co.nz>)

13 Ministry for the Environment website: <http://www.mfe.govt.nz/climate-change/adapting-climate-change/adapting-sea-level-rise>.

14 Parliamentary Commissioner for the Environment: *Changing Climate and Rising Seas: Understanding The Science*, November 2014.



The future

The IPCC says a continually rising sea level will increase the rate and extent of coastal erosion in future. It predicts the average global sea level to rise a further 30 centimetres by 2050 – even if the world managed to stop its carbon emissions tomorrow. If carbon emissions can't be cut quickly, the seas could rise a metre by 2100, and much more beyond that. Low-lying island states and atolls will experience more coastal inundation and salinisation of groundwater.

More than half the people in Pacific developing countries live within 1.5 kilometres of the shore. Many of these countries lie only a few metres above sea level. They are already feeling the impact of extreme events super-imposed on higher seas. An increase of a further 30 centimetres will flood many critical areas permanently and threatens some populations.

Kiribati has bought land in Fiji to grow food on, and perhaps eventually provide a refuge for Kiribati people from rising seas. Likewise, Tuvalu's Prime Minister Enele Sopoaga said in late August 2015 that his country may have to buy land in New Zealand and Australia to grow food and prepare for migration. These are not options the people and governments of these lands want to take. They are a last resort, because the rest of the world has not acted soon enough to stop rising seas.

As Fala Haulangi, a New Zealand-based Tuvaluan, says, "We're dealing with human lives here and their livelihood. How would you feel if you're going to be told that you have to move out of your country that you were raised in. ... That's where you belong, that's your identity, that's your roots. It's part of you: the sea, the land, everything around you – and so, that's become our identity. ... I think the most important thing that needs to happen from here is that the global community needs to become united and say the same message: We all need to reduce. We need the support of all nations to deal with climate change immediately, it will be too late if we keep mucking around."¹⁵

Conclusion

We have assessed the impact of coastal flooding and erosion in Oceania in 2015 as 'high'. This year, many places in the Pacific, especially Kiribati, Tuvalu and low-lying islands of Papua New Guinea, experienced more frequent and stronger King tides, in addition to the impact of storms and super-cyclones such as Pam. Coastal inundations of low-lying areas are happening with more frequency, and it is becoming harder for people to 'bounce back'. Relatively small coastal events can have very significant impacts on small, low-lying islands.

While there often appears to be funding for repair and relocation of major infrastructure, such as roads and public sea walls, it is clear from ordinary people's experience that they are largely having to fend for themselves in rebuilding sea walls or organise their own relocations – and pay for it themselves.

¹⁵ Fala Haulangi at World Humanitarian Summit for the Pacific, Auckland, 2 July, 2015.



CARITAS INDICATOR:

Our assessment of the impact of coastal flooding and erosion in Oceania 2015

■ LOW ■ MODERATE ■ HIGH ■ SEVERE ■ EXTREME

Recommendations

- The world community must negotiate a binding, global climate agreement at the United Nations climate conference in Paris in December 2015. This must promote a framework for adaptation for communities *already affected* by climate change, and support the most vulnerable. Adaptation measures must involve and build on local knowledge and mechanisms.
- National and local governments in our region need to identify their populations most at risk from sea-level rise, and develop comprehensive strategies with local communities to identify options available.
- Developed countries supporting aid in the Pacific, particularly Australia and New Zealand need to progressively increase their funding for climate change mitigation, adaptation and disaster risk reduction in the Pacific, and target the most vulnerable communities.
- Institutions accumulating scientific, observational and other information need to share their findings openly, especially with populations most affected by coastal changes.
- International funding bodies, developed nations and Pacific national governments must provide much increased and appropriate funding for projects to assist vulnerable people in coastal areas.

The Carteret Islands: Rising tides



Ursula Rakova with her granddaughter.

Ursula Rakova's great grandmother grew up in Papua New Guinea's Carteret Islands in what was a paradise, but Ursula will not remember it as such. Even less so, her daughter. Instead it will be the place they fled from to seek safety from rising seas.

"The sea is basically eroding our shorelines," says Ursula. "We have lost 60–70 metres of land. The shorelines are really getting smaller." Her own island of Huene was cut in two in 1984 by the rising sea.

"I come from a matrilineal society, where land is passed on from mother to daughter," says Ursula. "I will not be able to pass land

to my daughter anymore, because my atoll is divided in half, and that's basically my inheritance – my future inheritance – my daughter's future inheritance. And so we are beginning to lose this connectedness to the islands we love, and we are being forced to move because of situations where rising sea levels are basically forcing us to move from our homeland."¹⁶

In 2006, Ursula answered the call of her Elders to set up the organisation Tulele Peisa. She had earlier been involved in environmental work and community education. But this new work was to carve out a new future for her people on mainland Bougainville – where they could set up houses and land to grow food crops, cash crops such as cocoa, and trees for food, timber and ecosystem restoration.

¹⁶ Ursula's quotes from Interview on Sunday Morning with Wallace Chapman, Radio New Zealand National, 5 July 2015.



Students at Montmartre High School, Port Vila, Vanuatu clear areas and plant them with resilient and fast-growing crops after cyclone Pam.



CARITAS INDICATOR

Our assessment of the overall environmental impacts affecting people's access to safe, healthy food and water in Oceania in 2015
Read more on page 43

3 What are we to eat? What are we to drink?

Frequently, in fact, people's quality of life actually diminishes – by the deterioration of the environment, the low quality of food or the depletion of resources – in the midst of economic growth. – LAUDATO SI', PARA 194.

Food and water are among the most basic of human rights. But climatic changes, overfishing, conversion of food production areas to other uses, and changes from traditional practices and diet are affecting people's ability to access healthy food and water supplies. Current and comprehensive measures of food and water security aren't available, or don't indicate accurately people's ability to feed themselves or access reliable, safe water. As we seek to monitor implementation of the Sustainable Development Goals in Oceania, what indicators are relevant to our region?

Kiribati and Tonga: There were once many trees

Namoriki Rotitaake lives with his family near Eita village in south Tarawa, Kiribati. They once had healthy coconut trees around their home, but after a particularly bad storm event, "the sea wall broke, and a lagoon was created".

Surveying the stunted remains, Namoriki says, "There used to be plenty of coconuts and pandanus trees. There were once many trees like that, but then the sea came in – they died."

After King tides and storms, Namoriki works to rebuild the sea walls but can do nothing about the trees.



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Elsewhere in the Pacific, parish priest to the Ha'apai group in Tonga, Fr Taniela 'Enosi, regularly travels through bush to the southern end of Lifuka island. He says that, once, you couldn't see the sea through the trees, but now you can. "The sea is coming closer. Time will tell. When there is no more road here, there will be the seashore." Every time he comes to the southern tip, more coconut palms have fallen into the sea, eroded from the base. But someone still plants new ones to replenish the losses.

Local food supplies

Many Pacific Island communities, especially in rural areas, rely on subsistence food production and fishing or local foods bought at markets. Cultivated staple foods include roots and tubers such as sweet potato, sago and taro; bananas, pandanus, breadfruit and coconut. Fish and seafood are major sources of protein and income, while the inland forests of larger islands provide staples such as wild plant foods, wild pigs and freshwater prawns. There is increasing reliance on imported foods, especially in urban areas.

Local food production depends on finely balanced ecosystems, which are being stressed by degraded land, deforestation, loss of plant and animal species, less freshwater, and degradation in coastal and marine areas.¹⁷ Rising overall temperatures, extreme weather and sea-level rise further affect the ability of vulnerable food and water systems to recover from stresses.

However, environmental impacts vary with island geography and populations. For example, more people moving to the main island of Rarotonga in the Cook Islands is pressuring coastal ecosystems and water supply.¹⁸

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Gathering food in Tinputz, Bougainville.

Food from the lands and forest

Most crop lands in the Pacific are located to benefit from summer rains, so climatic variability destabilises seasonal routines and growth patterns, as well as damaging land and causing loss of soil fertility. Kiribati and Tonga are among those places reporting that staples such as mangoes and breadfruit are yielding smaller sizes or fruiting at unusual times of the year, due to greater weather variability.

Unusually severe frosts, coupled with drought in Papua New Guinea in August 2015, killed off potato, kaukau (sweet potato), taro, bananas, pandanus and other crops in the Highlands.

Coastal gardens and food trees are being affected by sea-level rises, King tides and flooding, as coastal inundation, salinisation and erosion contaminate and reduce the size of agricultural lands. Sea-level rise and wind threaten agriculture with salt spray. Caritas Tonga reports that five years ago, 10 per cent of Tongan plantations were exposed to sea spray. Now it is 40–60 per cent, which means more crop damage.¹⁹

17 Jon Barnett: "Dangerous climate change in the Pacific Islands: food production and food security" in *Regional Environmental Change* 03/2011; 11:229-237.

18 FAO: *Climate Change and Food Security in Pacific Island Countries*, 2008.

19 Amelia Ma'afu, Caritas Tonga, October 2014.

...there is a great variety of small-scale food production systems which feed the greater part of the world's peoples, using a modest amount of land and producing less waste, be it in small agricultural parcels, in orchards and gardens, hunting and wild harvesting or local fishing.

– LAUDATO SI', PARA 129.

West Papua: food security for whom?

In Merauke, West Papua, large scale mechanised agricultural production aims to meet Indonesia's food self-sufficiency goals, but is taking traditional forest food sources away from the indigenous Malind Anim people. The Merauke Integrated Food and Energy Estate (MIFEE) was established in August 2010 to grow oil palm and food over a 1.6 million hectare area.

The director of the Catholic social justice office SKP Merauke, Fr Anselmus Amo, says agricultural companies are failing to follow proper procedures for using traditional lands. Local people end up signing a Memorandum of Understanding that details how much money will be given for the release of their traditional lands, but not full details of the agreement. After the indigenous peoples give up their land for use, they cannot cultivate it again.

The agricultural companies and rogue elements of the Indonesian military and police forces intimidate the Malind Anim, while the District Government does not defend their legal rights. However, some communities, with help from agencies such as SKP Merauke, have resisted company pressure and fended off proposed developments.

In May 2015, Indonesian President Joko Widodo announced 1.2 million hectares of rice fields would be developed in three years, ultimately expanding to 4.6 million hectares, according to the monitoring organisation Awas Miffee. This would cover the entire Merauke region, including a National Park and protected forests. In addition, tens of thousands of hectares of land for sugar-cane plantations have been signalled for Merauke.

SKP MERAUKE



Malind Anim women and children pass a log pile in Zanegi, Animha District, Merauke. The Zanegi villagers now have to travel long distances to get basic foods such as sago, while child malnutrition and disease rates have increased.

Food from the sea

Coastal fishing provides 50–90 per cent of animal protein for coastal communities in many Pacific island countries, and almost half of coastal households earn their first or second income from catching or selling fish. About 70 per cent of the fishing is subsistence and the remainder is from largely small-scale commercial fishing. Studies suggest subsistence catches are well underestimated.²⁰

PHILIP GIBBS



Caspar and friends fishing from the shore on Kapo Island, West New Britain, Papua New Guinea.

However, warmer temperatures, ocean acidification, rising sea levels, higher rainfall and changes in ocean currents and nutrient supply are affecting sea-life, and reducing catches from coastal fisheries.

There was a 60 per cent increase in ciguatera poisoning of people from seafood from the 1973–1983 decade to 1998–2008 decade.²¹ Ciguatera poisoning is caused by toxic algae associated with dead or damaged coral. Rising sea temperatures are expected to cause more frequent and severe episodes of coral death and coral bleaching, which will impact ciguatera poisoning and marine life.

In terms of deep sea fishing, the South Pacific Regional Environment Programme (SPREP) says that the main commercially exploited tuna species “are reaching the limits of sustainable harvest”,²² while the Food and Agriculture Organisation (FAO) reports that, “the Southeast Pacific has had large interannual variations with a generally declining trend since 1993.”²³

In a July 2015 United Nations Security Council debate on challenges for small

island states, New Zealand Foreign Affairs Minister Murray McCully said despite its healthy tuna fishery, the “Pacific’s largest asset” was threatened by illegal or under-reported fishing. Losses from the tuna fishery were estimated at US\$400 million, while its Pacific owners were only receiving 14 per cent of its market value.

“We need a concerted international effort to stamp out illegal fishing and under-reporting practices,” said Minister McCully. “They amount to literally stealing from some of the poorest people on our planet.”

20 J D Bell, J E Johnson and A J Hobday (eds): *Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change*, Secretariat of the Pacific Community, Noumea, New Caledonia, 2011.

21 Skinner, Brewer, Johnstone, Fleming and Lewis: *Ciguatera Fish Poisoning in the Pacific Islands (1998 to 2008)*, 2011.

22 South Pacific Regional Environment Programme (SPREP): *Pacific Environment and Climate Change Outlook*, Apia, Samoa, 2012.

23 Food and Agriculture Organisation: *The State of World Fisheries and Aquaculture 2014*, FAO Rome.

Aotearoa New Zealand: Clear waters for Motuti

Most New Zealanders take access to safe, reliable drinking water for granted. But it's not a universal privilege.

In Motuti, northern Hokianga, people had relied on rainwater tanks, but contaminants caused illness, and more visitors and drier summers highlighted problems of supply.

"The biggest issue's always been that around January, February – Motuti runs out of water," says Rongo Makara, project manager for the Panguru/Motuti water project. "So all the families have to come over to Panguru to the creeks that we have there, and that's where they get their drinking water ... it can go right through to April-May."

Teresa Paparua lives in Motuti: "We get all our water via our spouting systems. There's always animals, nests, things like that, and the water's 99 per cent of the time not clean. And it happens with all of us."

With financial support from Foundation North, the community installed a solar-powered water scheme to reduce the cost of pumping safe drinking water to its 35 households, extending a community-based water supply that serves neighbouring Panguru. Waipuna marae in Panguru looks after the water intake and tanks at Waipuna marae. The Motuti Marae Trustees have paid for a pump that gets water to four holding tanks on a hill overlooking Motuti, before it is gravity fed to the community.

The Ministry of Health supports the project through its Drinking Water Assistance Programme, which helps isolated communities install small, treated drinking-water systems.

"It's taken a lot of collaboration between the Panguru community, Motuti, landowners and trusts to get the water over to Motuti," says Rongo. "It's metered, mostly so that we can keep an eye on our consumption at our end. We don't want to deplete the source, because Panguru is also in that water line."

"The water lines are locally owned and managed and governed. We retain the source; the resource consent is under our marae in Panguru," says Rongo.

RONGO MAKARA



This is a good example of the community taking control with support from a local government health agency, but how many other marae and rural communities are putting up with unsafe or inadequate water supplies?

Community leaders in the Panguru/Motuti water project (left to right): Hone Taimona (Hauora Hokianga Health Trust and coordinator of Te Puna Wai o Hokianga), Rongo Makara (Project Manager), Cyril Howard (Foundation North), and Kevin Robinson (Chair of Panguru Motuti Trust and Trustee of Motuti Marae).

Water

... access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights.

– LAUDATO SI', PARA 30.

Drinking water in the Pacific is sourced primarily from rainwater, groundwater, and surface water such as rivers and lakes. Desalination has become a significant source for Kiribati and Nauru, and to a lesser extent for Tuvalu.²⁴ Risks arise from weather-related events such as cyclones damaging rainwater collection systems, storm events contaminating freshwater lenses with saltwater, and droughts affecting water supply.

Availability of freshwater varies highly across the region. However, because many people consider it so abundant, water conservation and efficiency measures are not widely practised – except in times of drought or shortage. Leakage can lose up to 50 per cent of water in water supply systems.²⁵



Communal water tap in Vona village, Papua New Guinea.

Measuring the damage

Ironically, as rising seas take out shoreline staples such as coconut and breadfruit, and salt up groundwater; indicators and measures of local food security and safe drinking water are unavailable or hard to find. The following indicate what's not available:

- **Natural Resource Indicators and Agro-environmental Indicators** of the FAO show little about people's ability to grow their own food. There are also insufficient data available past 2011 for Pacific islands.
- **Biodiversity Nutrition Indicators** developed by the FAO and Biodiversity International look promising as indicators of healthy biodiversity in Pacific diets, but national-level data are not readily available.
- **An Environmental Vulnerability Index** developed by the (now) Secretariat of the Pacific Community with the United Nations provided promising indicators of environmental, economic and social sustainability, but was abandoned in 2005, soon after it started.
- The **Sustainable Development Goals** to guide global development over the next 15 years were approved at the end of September 2015. A range of global indicators to measure progress, including food and water goals, will be finalised in 2016. However, few of the indicators being considered are currently available comprehensively for the Pacific. Indicators for this region need to be "Pacific-specific".

The most up-to-date overview of Oceania's environment, the *Pacific Environment and Climate Change Outlook 2012*,²⁶ concludes, "The lack of a consistent monitoring framework within and across the Pacific Islands limits the ability to gain an accurate and up to date 'snapshot' of the current state of the natural environment as well the ability to monitor both positive and negative change over longer periods of time."

However, case studies and anecdotal evidence strongly indicate that food and water supplies in the Pacific are being disrupted or put at risk through changes in the human and natural environment.

24 SPREP: *Pacific Environment and Climate Change Outlook*, Apia, Samoa, 2012.

25 SPREP: *Pacific Environment and Climate Change Outlook*, Apia, Samoa, 2012.

26 South Pacific Regional Environment Programme (SPREP): *Pacific Environment and Climate Change Outlook*, Apia, Samoa, 2012.

El Niño takes a bite

At the time of finalising our report, an El Niño cycle is strengthening across the Pacific, impacting food and water supplies. El Niño is a periodic warming of the central and eastern equatorial Pacific Ocean, which generally leads to drier and warmer weather in the western Pacific, including parts of Australia and New Zealand, and the risk of more and larger cyclones. El Niño usually peaks in the southern hemisphere in late spring or early summer, and weakens by autumn.

This El Niño could be the strongest on record, and parts of the Pacific are likely to be 2°C warmer than usual.²⁷ Caritas partners in Tonga and Papua New Guinea are reporting drought and water shortages. Vanuatu, Fiji, Marshall Islands and Samoa have also issued drought warnings. In early September an estimated two million people were being affected in Papua New Guinea by water shortages, crop losses and starvation – 24 people had died in Chimbu Province.²⁸

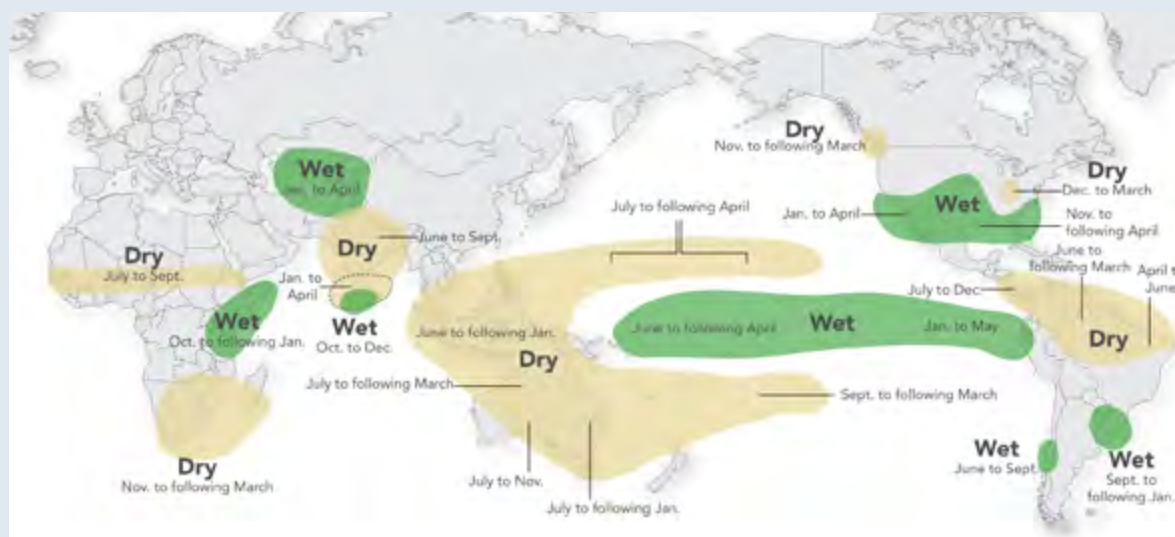
Writing from Wabag diocese, Bishop Arnold Orowae said: “I went to Laiagam, a district in the Enga Province of the Catholic Diocese of Wabag, last week and on my way I saw a lot of the food gardens being affected by the frosts. ... The newly planted potatoes and other vegetables were destroyed. ... this frost has affected parts of Enga Province which have never been affected by frost before. ... the effects will be felt for a longer period of time. ... we will definitely need some assistance.”

Elsewhere, in Western Highlands province, Caritas Coordinator for Mt Hagen Archdiocese, Jenny Mek, said unusually severe frosts had caused “huge damage” to food gardens in Tambul/ Nembilyer. Bushes adjacent to the gardens looked like they’d been on fire. She added:

“The environment itself looked pale, weary and yellowish brown as though it has been sprayed on with the chemical gramoxine. The sweet potato (kaukau) leaves had dried up leaving the vines and the kaukau got rotten all over – not suitable for consumption.”

She said people will survive for a few weeks, but after that would start dying without external help.

Since the mid-1970s, El Niño events have been occurring with greater frequency and intensity, relative to the previous 50 years, consistent with predicted effects of global warming.²⁹



A map showing typical El Niño pattern around the world.

Source: International Research Institute for Climate and Society.

27 BBC News: “Current El Niño climate event ‘among the strongest’” 1 September 2015 (at <http://www.bbc.com/news/science-environment-34120583>).

28 International Federation of Red Cross and Red Crescent Societies: *Information bulletin: Papua New Guinea: Drought and Frost*, 5 September 2015.

29 Earthguide, Scripps Institution of Oceanography at University of California, San Diego (at http://earthguide.ucsd.edu/virtualmuseum/climatechange1/11_1.shtml).

Fiji: Tutu Training Centre – taking charge of their own food security

The marcotting technique practised by Tutu Rural Training Centre in Fiji is proving invaluable to get rapid production of fruit from one tree plant, and may be particularly useful after storms or other disasters wipe out crops.

This plant propagation method, used by the Marist-run centre on Taveuni, involves stripping branches from a mother tree once the branch has fruited, then nurturing the branch in peat moss until roots develop. After rooting, the branch is cut and raised in sterilised seed mix. The newly budding trees fruit in the first season. By marcotting breadfruit trees, trainees can ensure continuous breadfruit supply from a single healthy breadfruit plant.

They have also used it on trees such as orange, mandarin, mango, rambutan and dragonfruit.


“Marcotting is a fast way that we can have fruit the same year that the mother plant is fruiting,” says Fr Petero Matairatu. “It is a good way to get more fruit instead of waiting for the seeds of fruit trees.”

It is just one way that the Centre is promoting good food and wellbeing. Young people and their families are learning to restore and repair soil and food systems to ensure their own food security, self-sufficiency and cash income.

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Susanna (standing) and Makarita (seated) with seedlings at the Tutu Centre. On the right are young breadfruit seedlings, grown by marcotting.



Social problems must be addressed by community networks and not simply by the sum of individual good deeds. ... The ecological conversion needed to bring about lasting change is also a community conversion. – LAUDATO SI', PARA 219.

The future

Climate change and other environmental impacts are making it harder for Pacific Island communities to grow their own food.

However, some forecasts downplay or under-represent the risks. For example, a recent WorldFish report³⁰ says “the overall impact of climate change on Pacific staple food crop production is expected to be generally low over the next few decades.” But this does not reflect the impact on individual countries and communities, the long-term impacts of accumulating severe weather events, and the interplay of other environmental impacts.

The prediction of “an accelerating decline in swamp taro production by 2035” due to groundwater salinisation minimises current impacts already felt by small communities such as the Carteret Islands that lost their swamp taro entirely in 1992.

The report itself says it is extreme events such as severe cyclones, storm surges and King tides that will have the biggest impact, rather than overall temperature changes or sea level rise. It acknowledges that limited data available for Pacific food crops makes it harder to assess impacts.

At sea, the report says climate-change impacts on fisheries and aquaculture in Oceania will be mixed. Sea temperature changes will likely cause tuna to migrate eastwards, to the detriment of the western Pacific, and freshwater aquaculture is likely to be more productive. However, coral reef fisheries, affecting coastal catches, could decrease by 20 per cent by 2050, and coastal aquaculture is expected to be less efficient.

*

The people of the Pacific are not taking climatic changes lying down. The Kiribati Climate Action Network (Kiribati CAN) is working on food security. “We work closely with the community, especially women,” says the network’s secretary, Claire Anterea. “We try to build their knowledge of planting our own food so that we don’t get dependent on the food from overseas. Also we help them to learn how to plant cash crops, so they can sell it and pay their own school fees.”

Kiribati CAN is also helping restore tree crops on Nonouti, southeast of Tarawa, as older trees are not bearing much fruit. “Each village is going to plant 10,000 coconut trees,” says Claire, “and 10,000 of breadfruit so that they can have food security.”

One other positive development in the Pacific is the emergence of ‘Knowledge Hubs’. Caritas partners are members in Solomon Islands – knowledge is shared between networks of community farmers, to enable them to gain agricultural information and planting materials, and trial sustainable or climate-resilient farming systems. Similar hubs have formed or are being formed in Vanuatu, Tonga and Fiji.

Locally Managed Marine Areas are also growing in popularity. These initiatives provide customary access and are guided by management principles such as ‘taboo’ areas and species. They currently involve more than 500 communities in 15 different Pacific Island countries or territories.³¹

³⁰ J Bell and M Taylor: *Building climate-resilient food systems for Pacific Islands*. Penang, Malaysia: WorldFish. Program Report: 2015-15.

³¹ SPREP: *Pacific Environment and Climate Change Outlook*, Apia, Samoa, 2012.



Conclusion

For 2015, we have assessed the environmental impacts on people's access to safe, healthy food and water in Oceania as 'high'. Though food is often in abundance in the Pacific, extreme events such as the current El Niño highlight the vulnerability of Pacific people to environmental shocks such as heavy rainfall, drought or severe frosts.

Generally, small-scale farmers have just enough food, but little capacity for long-term storage. At most times in most places, there is plenty of locally grown, nutritious food.

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Vegetables are expensive and hard to grow on Kiribati atolls, but people, such as this woman at Betio, are experimenting with produce including cabbages, pumpkin and cucumbers.

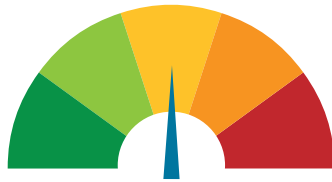
At sea, there are generally declining yields from reef (coastal) fish, while deep sea fisheries are also being overfished or reaching limits. Degradation of reefs is leading to higher incidences of ciguatera poisoning and threats to other marine life.

With regard to water, there is decreased rainfall in some places; while some water systems have collapsed or are overburdened. There are pollution issues and wastage in some reticulated water schemes. Water supplies for coral atolls are particularly vulnerable due to small underground water lenses and limited use of rainwater tanks.

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A cocoa plantation in Tinputz, Bougainville.



CARITAS INDICATOR: Land-based foods, sea-food and water

Our assessment of the overall environmental impacts affecting people's access to safe, healthy food and water in Oceania in 2015

■ LOW ■ MODERATE ■ HIGH ■ SEVERE ■ EXTREME

Recommendations

- Local production must remain the core of the food system in Pacific Island countries and territories to meet environmental, human health and emergency food-security needs, while farmers and fishing communities also need to be enabled and supported to trade their produce locally, regionally and internationally.
- Governments in the region and international bodies need to agree on clear, accessible statistics or indicators that indicate the impact of environmental changes on food and water supplies. Relevant Sustainable Development Goal (SDG) indicators for the Pacific need to take into account all the environmental, cultural and social aspects of Pacific life and build upon Pacific cultures and values.
- Best available guidelines need to be supplied to farmers, covering choice of crop varieties, as well as soil- and water-management options to avert or lessen the risk of crop failures in the face of uncertain climatic changes. Agricultural knowledge and adaptation techniques need to be widely shared with local and small-scale farmers.
- Monitoring of environmental parameters such as temperature, precipitation (rainfall), sea-level change and extreme events needs to be integrated into planning for food and water security.

The Carteret Islands: Food supplies at risk

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The first Carteret Islander to resettle in Tinputz, Bougainville.

King tides in 1992 wiped out the Carteret Islanders' staple crop of swamp taro and it no longer grows there. Now, the only foods their island provides for them are coconut and fish – and less palatable clams and crabs.

Food insecurity affects all of life on the Carterets. There are two primary schools and three early childhood schools on the islands. "Too often, these schools need to close, because the children are not getting enough food. Sometimes it is two weeks, sometimes for months," says Ursula Rakova of the community organisation Tulele Peisa. The children can't concentrate on their school work when they're not getting enough to eat, and their schooling is interrupted.

More unpredictable weather also hampers islanders' ability to obtain seafood.

Rough seas mean that they can't get out to fish, or the water is so unclear they can't see the fish.

In 1963, the Catholic Church recognised the dangers the Carteret Islanders faced and undertook to help move them to the mainland. Then in 2007, Catholic Bishop of Bougainville Bernard Unabali saw for himself the lack of food and dangers of bad weather while staying on the island for 2 weeks, and confirmed the earlier offer, making four areas of land available on Bougainville for the Carteret Islanders to resettle to.

Those on the mainland and those who remain on the islands are keeping up a mutual exchange of agricultural crops for fish. But in July 2015, the food situation on the islands was so dire, the Bougainville Emergency Management office asked the mainlanders to provide food relief for their island compatriots. They responded with 18 sacks full of cassava, taro and other crops.



**Rufina, Philip and Naksi from Kapo Island
in the Bismarck Sea, West New Britain,
Papua New Guinea.**

PHILIP GIBBS



CARITAS INDICATOR

Our assessment of the impact on people and communities of offshore mining and drilling in Oceania 2015

[Read more on page 53](#)

4 In deep water: offshore mining and drilling

All of this helps us to see that every intervention in nature can have consequences which are not immediately evident, and that certain ways of exploiting resources prove costly in terms of degradation which ultimately reaches the ocean bed itself. – LAUDATO SI', PARA 41.

The end of 2014 gave the green light to the world's first commercial seabed mine – set to begin extracting gold, silver and copper in 2018 from a site 30 kilometres offshore from Papua New Guinea. But exploratory mining and drilling has already impacted local communities in Oceania. Scientists don't even know a lot about life in deep sea ecosystems – and the machinations of companies and governments exploring the depths can be just as murky.

Marine deaths in Papua New Guinea and Aotearoa

When explorations for seabed mining took place in Papua New Guinea waters in 2008–2010, schools of dead tuna washed up on nearby beaches. Even dogs wouldn't eat the dead fish, as they normally do. "Something made the dogs not want to eat it," says community leader Oigen Schultz. Unfortunately, the fisheries department couldn't investigate the cause, due to transport and communication limitations.

In Aotearoa New Zealand, shortly after Norwegian firm Statoil started using sonar to map the seabed for petroleum exploration off Northland's west coast, three whales washed ashore on Ninety Mile Beach in August and November 2014. Then, at the beginning of 2015, three beaked whales were found dead at Whatipu Beach near Manukau Heads. It coincided with the time Statoil's boat *Aquila Explorer* had begun bouncing seismic pulses off the seabed, though the whales washed up 200 nautical miles from the testing site.

A Code of Conduct applies to such seismic testing in New Zealand waters, recognising its potential to disturb marine mammals, though the New Zealand Department of Conservation says no deaths or strandings have been directly linked to seismic surveying. However, the United States-based Natural Resources Defense Council says "a substantial and growing body of research now indicates that ocean noise pollution negatively affects at least 55 marine species, including several endangered species of whales and 20 commercially valuable species of fish." Seismic surveys can also impact a very wide area.

Indigenous voices in both Papua New Guinea and Aotearoa New Zealand see a connection between deep sea mining explorations and the death of marine life.



The search for oil and gas

Despite the increasing global consensus around cutting our carbon addiction, the search for oil and gas continues unabated around the globe, including offshore, at ever-increasing depths.

Worldwide, offshore sources for oil and gas account for 33 per cent and 25 per cent respectively of our current fossil fuel use, and these percentages are expected to increase. Threats posed by offshore drilling include disturbance of sea life from seismic surveys; gas emissions from flaring and venting; pollution of the sea and coasts from substances such as drilling fluids; and the risks associated with a major accident – such as the 2010 Deepwater Horizon disaster in the Gulf of Mexico.³²

The depths to which oil and gas companies will go is steadily increasing – from 300 metres in 1975 and 1,500 metres in 1986, to a current record of 3,165 metres.

Seabed prospecting

Meanwhile, increasing demand for minerals such as gold, silver and copper is making offshore mining potentially more lucrative. The world's first commercial seabed mine will begin in Papua New Guinea waters in 2018, after decades of exploration or “experimental seabed mining”.

The objects of desire at the bottom of the sea are mineral nodules, cobalt-rich crusts, and seafloor massive sulphides (SMS) – huge formations of rich mineral ores around active and formerly active hydrothermal vents.

There is great excitement in the deep sea mining sector about the prospects, and a naive optimism – or public relations spin – that it can be environmentally friendly. One of the topics at the fourth Deep Sea Mining Summit held in Singapore at the end of September 2015, and specially focused on Asia-Pacific was: “Achieving sustainable seabed mining projects in harmony with nature”.³³ However, much remains to be known about deep sea ecosystems. The Deep Sea Mining Campaign says “it is not possible to predict the impacts of any individual deep sea mining project, let alone the cumulative impacts of the many potential deep sea mining projects proposed throughout the Pacific.”³⁴

The United Nations' International Seabed Authority (ISA) is responsible for monitoring and licensing seabed exploration and mining in international waters, including ensuring benefits are shared with developing countries. Any company exploring or mining in international waters needs the sponsorship of a nation state. However, the Authority's restrictions in international waters may be driving companies towards the Continental Shelves and Exclusive Economic Zones (EEZs) of individual countries with weaker restrictions. In such places, there may be lower government capacity to develop policy; monitor and enforce regulations; and review environmental impact assessments. In addition, the track record of several Pacific nations over governance and transparency of land-based resource extraction is not good.

32 Global Ocean Commission, 2014: *Proposal 6: Offshore Oil and Gas*.

33 <http://www.asia.deepsea-mining-summit.com/>

34 H Rosenbaum: *Out Of Our Depth: Mining the Ocean Floor in Papua New Guinea*, 2011.

Seabed mining in the Pacific

More than 1.5 million square kilometres of Pacific Ocean floor has been licensed for seabed mining exploration, and over 300 exploration licences granted for offshore minerals around Pacific Island countries.³⁵

The Pacific Deep Sea Minerals Project has been working since 2011 to develop deep sea mining laws for 15 Pacific Island countries, including consultation and involvement of citizens in decision-making. It is sponsored by the Secretariat of the Pacific Community (SPC) and the European Union. So far, Cook Islands, Fiji, Tonga and Tuvalu have introduced new legislation, while public consultations took place in 2015 in Vanuatu and the Marshall Islands. The Cook Islands announced in August that it was opening up 11,000 square kilometres of its EEZ for exploration.



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Will the wellbeing and livelihoods of these Vanuatu fishermen be threatened if deep sea mining gets underway around their shores?

However, many Pacific Non-Governmental Organisations and churches are critical of the approach being taken, and say more information is needed. Some express total opposition. The Pacific Network on Globalisation and the Bismarck Ramu Group in Papua New Guinea have called for a moratorium on experimental seabed mining, to seek more knowledge on the extent to which it will affect the lives of Pacific people.

In international waters in the Pacific, most interest is in polymetallic manganese nodules in the Clarion-Clipperton Fracture Zone in the northeast Pacific, where there are 15 licences. Four are sponsored by the Cook Islands, Kiribati, Nauru and Tonga, while other nation-state sponsors come from Asia, Europe and even Cuba. (See Table 5.) Financial benefits may flow to companies and governments, but questions are being asked about how ordinary people in Pacific islands will benefit, and what will be the environmental costs?

A recent joint report from the Deep Sea Mining Campaign and Economist at Large says both governments and the ISA lack the regulatory frameworks and decision-making tools to ensure the well-being of coastal communities and marine ecosystems.³⁶

³⁵ Maritime Executive website, October 2014.

³⁶ H Rosenbaum and F Grey: *Accountability Zero: A Critique of The Nautilus Minerals Environmental and Social Benchmarking Analysis of the Solwara 1 Project*, August 2015.

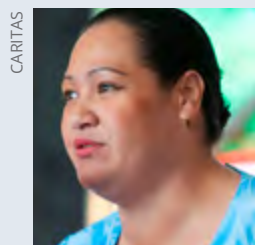
Fiji and Tonga community consultations

Consultations about deep sea mining in the Pacific have encountered reactions ranging from absolute opposition to deep-seated concerns for more, understandable and relevant information.

Noelene Nabulivou of Diverse Voices and Action (DIVA) for Equality in Fiji, writing to the South Pacific Regional Environment Programme (SPREP), said:

“We remain unequivocally opposed to DSM [Deep Sea Mining] ...Our region is already experiencing the harsh consequences of climate change and environmental degradation ..., as well as heightened poverty in the region. It is clear to us that further new extractive industries such as DSM are not the best strategy for economic development for small island states. A new kind of safe, just and environmentally sound society, economic and ecological system is necessary.”

She went on to say that the planet has already exceeded many safe boundaries. “Humanity is under threat, there is already heightened biodiversity loss and species extinction, ... ocean acidification, our coral reefs are under threat and immediate action and deep system change is necessary.”



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Amelia Ma'afu

“The need for systemic shift now is reflected in the scope and depth of the proposed sustainable development goals that [all 17] governments will be requiring all states to measure themselves against from next year,” she says.

Caritas Tonga’s Amelia Ma’afu attended a briefing earlier this year by Nautilus Tonga, which has been working in the country since 2008. Nautilus Minerals has provided health and education services and trained people in the skills needed for seabed mining. Country Manager Paul Taumoepeau said exploration could create jobs and allow Tonga to benefit. However, Amelia says, “there is still much unknown with regards to deep sea mining ... more information dissemination needs to occur especially pertaining to short and long term environmental impacts not just on the sea bed but on sea life and communities that are directly affected by deep sea mining.”

Seabed licences within Pacific Island jurisdictions

Table 3: Seabed mineral prospecting and mining licences granted/under consideration for EEZs of Pacific Island countries. (For New Zealand related information, see page 52.)

COUNTRY	MINING LICENCES		PROSPECTING LICENCES		PROSPECTING LICENCES UNDER APPLICATION		COMPANY
	NUMBER	AREA (sq km, approx)	NUMBER	AREA (sq km, approx)	NUMBER	AREA (sq km, approx)	
Fiji			14	58,243	3	4,844	Nautilus Minerals (3 other licences, unconfirmed)
Papua New Guinea	1	59	13	13,609	9	23,018	Nautilus Minerals
Solomon Islands			92	50,102			Nautilus Minerals
			67		14		Bluewater
Tonga			16	77,563	30	131,878	Nautilus Minerals
Vanuatu			41	3,630	14	1,247	Nautilus Minerals
TOTALS			243	203,147	70	160,987	

(Sources: Nautilus Minerals and Ramumine.)

Seabed licences in Pacific international waters

Table 4: Seabed mineral prospecting licences in Pacific international waters approved by the International Seabed Authority (refer page 46). Licenses sponsored by Pacific nations are highlighted.

CONTRACTOR	CONTRACT SIGNED	CONTRACT EXPIRES	SPONSORING STATE(S)	AREA (km ²)
Licenses for polymetallic manganese nodules – all in the Clarion-Clipperton Fracture Zone, northeast Pacific				
Interoceanmetal Joint Organization	29 March 2001		Bulgaria, Cuba, Czech Republic, Poland, Russian Federation and Slovakia	75000
Yuzhmorgeologiya	29 March 2001	28 March 2016	Russian Federation	75000
Government of the Republic of Korea	27 April 2001	26 April 2016	Korea	75000
China Ocean Mineral Resources Research and Development Association (COMRA)	22 May 2001	21 May 2016	China	75000
Deep Ocean Resources Development Co. Ltd. (DORD)	20 June 2001	19 June 2016	Japan	75000
Institut français de recherche pour l'exploitation de la mer (INFRAMER)	20 June 2001	19 June 2016	France	75000
Federal Institute for Geosciences and Natural Resources of Germany	19 July 2006	18 July 2021	Germany	75000
Nauru Ocean Resources Inc. (NORI)	22 July 2011	21 July 2026	Nauru	75000
Tonga Offshore Mining Limited	11 January 2012	10 January 2027	Tonga	75000
UK Seabed Resources Ltd.	8 February 2015	7 February 2028	United Kingdom	58000
Marawa Research and Exploration Ltd.	19 January 2015	18 January 2030	Kiribati	75000
Global Sea Mineral Resources NV	14 January 2015	13 January 2028	Belgium	75000
Ocean Mineral Singapore Pte Ltd (OMS)	21 January 2015	21 January 2030	Singapore	58200
UK Seabed Resources Ltd.	approved, to be signed		United Kingdom	
Cook Islands Investment Corporation	approved, to be signed		Cook Islands	
Licenses for cobalt rich crusts – all in Western Pacific Ocean				
Japan Oil, Gas and Metals National Corporation (JOGMEC)	27 January 2014	26 January 2019	Japan	3000
China Ocean Mineral Resources Research and Development Association (COMRA)	29 April 2014	28 April 2029	China	3000
Ministry of Natural Resources and Environment of the Russian Federation	Approved, to be signed		Russian Federation	

(Source: Adapted from Sandor Mulsow: "Update on the Status of Deep Sea Mining beyond national jurisdictions", *Journal of Ocean Technology* 05/2015; 10(1):1-12.)



Papua New Guinea: Solwara 1 – rubbing salt into the wounds

At the end of 2014, the Papua New Guinea government and Nautilus Minerals finally agreed on a joint venture to extract copper, gold and silver from 1,600 metres below sea level, 30 kilometres off the coast of New Ireland. The 11-hectare site at Solwara 1 (the name means ‘salt water’) will be the world’s first commercial seabed mine when it starts producing in 2018. It is expected to operate for two years, but 12 other Solwara sites are planned in the Bismarck Sea area. The exploration phase has already disrupted the traditional livelihoods of people on New Ireland and New Britain.

Many people along the west coast of New Ireland are ‘shark callers’: from small outrigger canoes they will call, trap and kill sharks by spearing and netting, or with a special noose. Rosa Koian of the Bismarck Ramu Group visited villages in the area, and reported during the exploration phase of the Solwara project: “The villagers told us ... they were not able to bring back sharks after long stays out at sea. They reported the disappointment in tourists when they flocked there to witness this great event.” The villagers blamed the disruption on Nautilus exploration boats: “These sharks are sensitive to noise and we believe it is the noise from these boats and the equipment they are using that have chased the sharks away,” they said.

The villagers also apologised for the lack of fish in their mumu (earth oven) – they couldn’t catch any because of sediment in the sea stirred up by the explorations.

“The people pretty much live off the marine ecosystem, to feed their families, to bathe,” says Oigen Schultz, Director of community group Zero Inc. “If pollution arises from the project, what guarantee is there that the project will not affect the people’s lifestyles?”

The community aren’t getting a full picture from consultations and education. “The people are in the dark. It’s a new form of mining. There are no safety guarantees that the ecosystems and surrounding environment will be protected.”

Limited financial benefits will not make up for environmental and cultural losses they will suffer.

In 2015, Nautilus Minerals commissioned an Environmental and Social Benchmarking Analysis (ESBA) of its Solwara 1 project – using natural capital accounting and an ecosystem goods and services framework to demonstrate that Solwara 1 has lower environmental and social impacts than three land-based mines.

However, a critique³⁷ of the Nautilus ESBA found it failed to follow well recognised and fundamental rules of cost-benefit analysis. In particular it:

- undervalued the “goods and services” provided by the deep sea ecosystem
- based its natural capital accounting framework on terrestrial measures, rather than values relevant to marine environments
- focused only on Solwara 1’s copper output, and ignored its gold production
- based its analysis solely on scientific and technical information provided by Nautilus and in particular the Solwara 1 Environmental Impact Statement, which has been found to contain many errors and gaps in science.

The critique concluded that due to lack of rigour, the ESBA failed to contribute to better decision making about Solwara 1 or about the advisability of any other deep sea mine.

³⁷ H Rosenbaum and F Grey: *Accountability Zero: A Critique of The Nautilus Minerals Environmental and Social Benchmarking Analysis of the Solwara 1 Project*, August 2015.

Customary law invoked to protect indigenous peoples' rights

Indigenous peoples battling to protect traditional resources and jurisdictions say international customary law gives them the right to protect seabed areas over which they have a responsibility for kaitiakitanga or environmental stewardship.

Here, a man from Messi village, on the West Coast of New Ireland province, puts up a “gorgor” at the proposed Solwara 1 site. Under traditional law, if Nautilus breaches this area with its ships or vessels, New Irelanders claim the right under “kastom” to destroy the vessels or ship.

In May 2015, a Māori delegation from Te Hiku o te Ika (Northland) travelled to Norway to tell Norwegian government company Statoil their ships are not welcome in Aotearoa New Zealand to prospect for oil and gas offshore. The delegation, which included representatives of Ngāti Kurī, Ngāti Kahu and Te Parawhero, was concerned about environmental impacts, but also that the company was undertaking prospecting without consulting with or obtaining permission from mana whenua, people with the authority over the area. Of particular concern was that exploratory drilling took place in Te Reinga basin – a sacred place of spiritual significance to Māori, as part of the traditional pathway of the spirits from Cape Reinga.



DENNIS A. KOSAM

Offshore regulation: New Zealand decisions lead the way

The Environmental Protection Agency (EPA) makes decisions about exploration for, and extraction of, both petroleum and minerals from Aotearoa New Zealand's Exclusive Economic Zone and Continental Shelf area.

Since the EPA's jurisdiction began in June 2013, two applications for offshore mining have each been refused: one for mining South Taranaki ironsands by Trans-Tasman Resources Ltd and, in February 2015, one for mining phosphorite nodules on the Chatham Rise, southeast of Wellington.

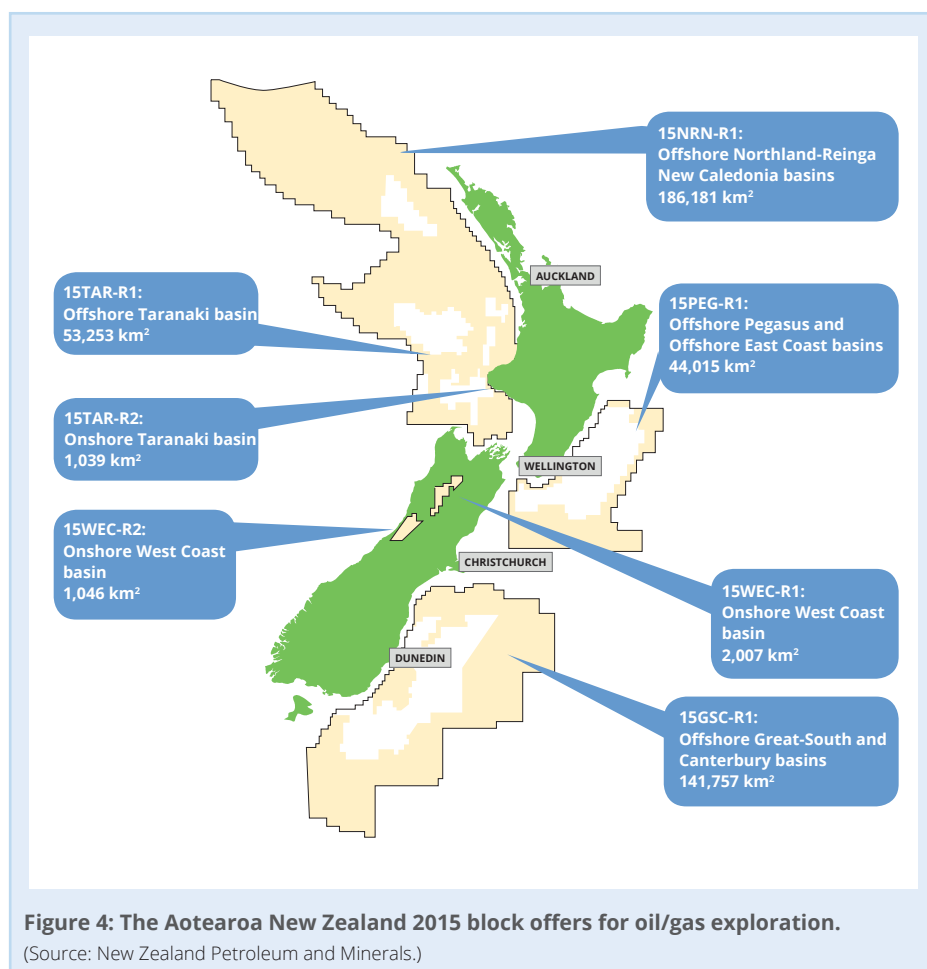
In the latter case, the EPA turned down Chatham Rock Phosphate's proposal because of "significant and permanent adverse effects" to the Chatham Rise environment. It was home to "potentially unique" stony corals, and rare and vulnerable ecosystems. There was "a lack of certainty" about the nature of the proposed operating environment and the adverse effects of mining there. The EPA concluded that mining's destructive effects could not be suitably minimised, and the economic benefit would only be "modest".

While some have expressed concern that these two decisions signal that Aotearoa New Zealand is "closed for business" to any form of seabed mining, non-government organisations both in New Zealand and overseas see it as a landmark decision responsibly applying the precautionary principle: that where potential adverse effects are not fully understood, activities should not proceed.

Over the last year, in its oil and gas jurisdiction, the EPA has granted applications by OMV NZ Ltd to continue development drilling at the Maari field on the South Taranaki Bight (December 2014), and for

further exploration activities on the Bight (August 2014), and also to Shell Todd Oil Services for exploration (September 2014).

Australia also has offshore oil and gas production sites, and continues to encourage petroleum exploration in Australia's offshore areas.





CARITAS INDICATOR

Our assessment of the impact on people
and communities of offshore mining and drilling in Oceania 2015

■ LOW ■ MODERATE ■ HIGH ■ SEVERE ■ EXTREME

The future

Demand for undersea minerals is being driven by ongoing and increased demand for minerals that power our modern world. This needs to be addressed. Who benefits the most from this new technology and can our physical world (onshore or offshore) provide for our current levels of use, let alone expectations?

As an example of the rise in demand, 20 years ago, 5.7 billion people averaged 4 pounds of copper per person each year, for use in electronics, buildings, etc. Today, 7.25 billion people use, on average, more than 5.5 pounds of copper per year.

Demand needs to be managed according to moral and ethical principles considering end use and purposes, rather than the market being left to meet the demands of greed. In the words of Pope Francis, “given the insatiable and irresponsible growth produced over many decades, we need also to think of containing growth by setting some reasonable limits and even retracing our steps before it is too late. We know how unsustainable is the behaviour of those who constantly consume and destroy, while others are not yet able to live in a way worthy of their human dignity.” (Laudato Si’, para 193).

Conclusion

For 2015, we have assessed the impact on people and communities in Oceania as ‘moderate’. The impacts in the region of offshore mining and drilling have so far been relatively localised and small. However, there is much uncertainty and cause for concern. We are particularly concerned at a lack of transparency and openness in some applications for offshore mining and drilling, and inadequacy of monitoring.

We are also concerned that information and consultation around the Deep Sea Minerals Project does not seem to be as forthcoming as it could be about our knowledge – or lack thereof – of deep sea environments and the potential impact of these new forms of mining.

Recommendations

- A global moratorium on deep sea mining exploration and exploitation until more is known about possible impacts on ecosystems and communities.
- Governments, companies and international authorities need to be more transparent and clear in their explanations about deep water environments and mining and drilling impacts, including the uncertainties.
- Oceania governments must invest in renewable energy or other environmentally and socially beneficial initiatives in New Zealand and Oceania, rather than financially support or subsidise the oil and gas exploration industry.
- Oceania governments need to invest more money, energy and education into recycling and recovery of materials from waste products.
- Governments and the ISA need to ensure regulatory regimes provide for full and adequate consultation with indigenous and local communities, to heed the concerns of those most affected. They should also ensure effective monitoring of impacts is in place where offshore mining, drilling and exploration is occurring.



The Carteret Islands in Papua New Guinea are in the front line of climate change impacts.



CARITAS INDICATOR

Our assessment of the adequacy and quality of climate finance in Oceania 2015

Read more on page 63

5 Counting the cost: Climate finance – who’s benefiting?

... since the effects of climate change will be felt for a long time to come, ... some countries with scarce resources will require assistance in adapting to the effects already being produced, which affect their economies. ... They are likewise bound to develop less polluting forms of energy production, but to do so they require the help of countries which have experienced great growth at the cost of the ongoing pollution of the planet – LAUDATO SI, PARAS 170-172.

More climate dollars are starting to flow to fix the damage caused by climate change, minimise further losses, and adapt to our changing home. But still, there are unresolved arguments over definition, donors are largely calling the shots, and the poorest are, mostly, shut out of the rooms where decisions are made, left begging for crumbs from the table. Where are New Zealand’s climate dollars going – and do we need to put some things right at home?

Climate finance for cruise ships and airport runways?

Climate-change-related funding by the New Zealand Aid Programme to the Pacific in the last three years has included \$21,000 to a second jetty for cruise ships in the Cook Islands, and more than \$5.5 million towards rehabilitation of three runways in the Solomon Islands. The justification for this “climate adaptation” was that it would allow more cruise ships to visit the Cooks – some are turned away from the main wharf due to bad weather, and that improved runways would “reduce aviation fuel loads”. While these projects may contribute to the economies of those countries, they clearly do not directly address erosion of coastlines and loss of food or water, or help people and vulnerable communities become more resilient to severe weather.

While the New Zealand government promotes its funding of (much-needed) renewable energy projects, behind the flagship projects are many others that continue ‘business as usual’, through, for example, fisheries, tourism and transport infrastructure. They are seemingly oblivious to the ecological crisis that is already tarnishing the idyllic South Pacific paradise image. Caritas analysis suggests that about half of Aotearoa New Zealand’s climate aid allocation over 2012-2015 is supporting business as usual or repairing the damage caused by cyclones and other disasters.



JAMES CRISP

Solar panels on the diesel generation plant in Rarotonga, Cook Islands.



The beginner's guide to climate finance

This year, developed nations recommitted to a pledge first made in 2009 to provide US\$100 billion a year from 2020 to help poor nations cut their carbon emissions and adapt to climate change.

The United Nations' Green Climate Fund is the main international vehicle for richer nations to meet the \$100 billion *a year* pledge. The New Zealand government has only pledged NZ\$3 million to this fund, preferring to favour direct support to individual countries (read more about New Zealand climate finance on page 60). Though launched in 2011, the fund is only now beginning to allocate finance to help poorer nations meet the challenges of global warming.

Measuring climate finance flows is difficult, as many channels exist within and outside the United Nations, and there is no clear international definition of 'climate finance'.

The Organisation for Economic Cooperation and Development (OECD) says **mitigation finance** supports the cutting or limiting of greenhouse gas emissions or removal of such gases from the atmosphere. **Adaptation finance** aims to reduce the vulnerability of people and nature to climate change, including disaster-risk reduction and emergency preparedness.

Donor countries largely make their own assessment on whether an activity meets whatever definition of 'climate finance' they are using.

Following the 2009 pledge, developed countries committed to three years of 'Fast Start Finance' (2010–2012), in which they reported they had met initial commitments of \$US30 billion to poorer nations.

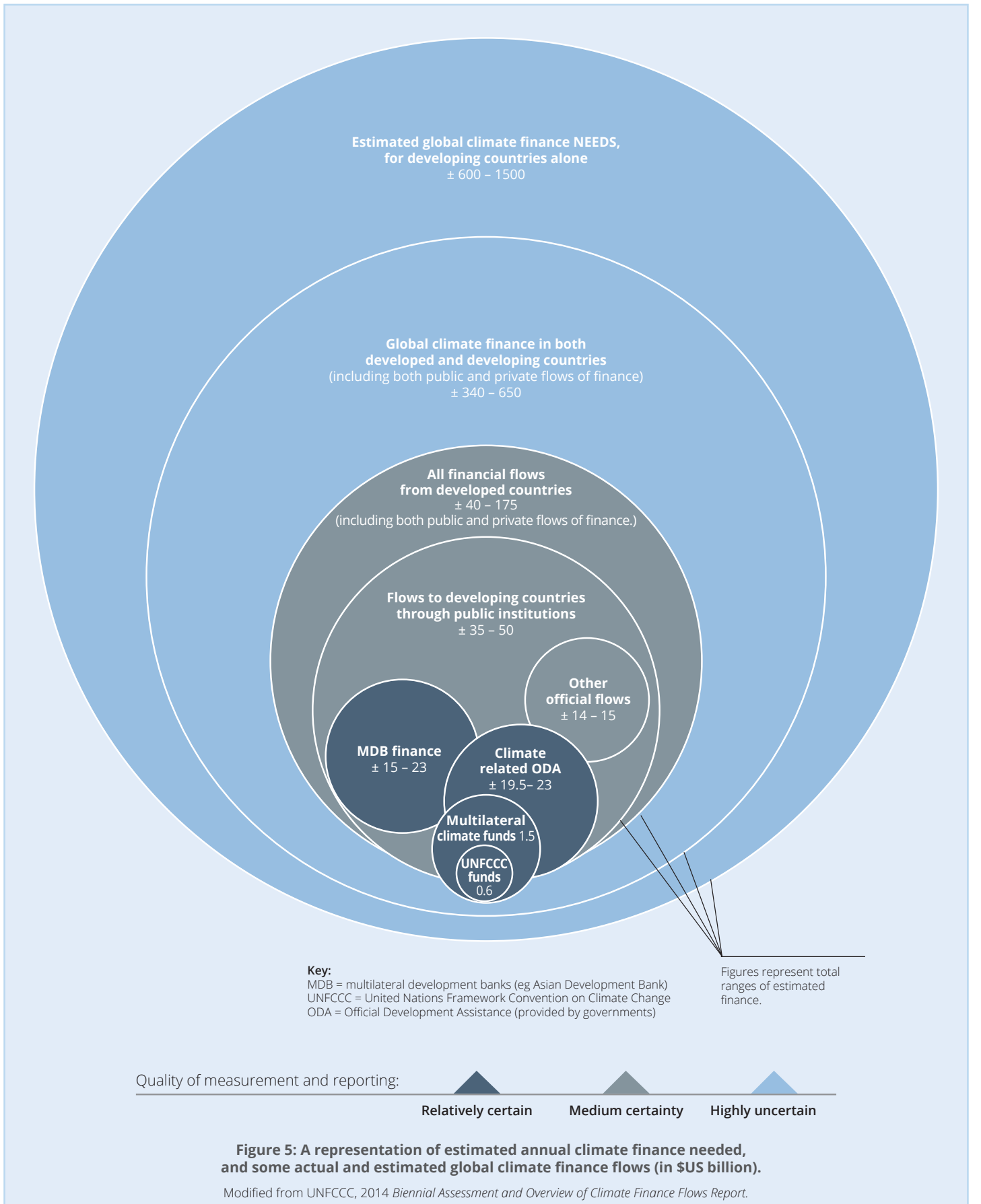
However, Catholic development alliance CIDSE says the actual needs of climate adaptation and mitigation for poorer countries are estimated at US\$600 billion to US\$1,500 billion per year. Governments are being asked to commit relatively small amounts relative to the damage caused. It is analogous to claims settled in Aotearoa New Zealand for breaches of the Treaty of Waitangi – the amounts agreed are well short of the actual damage caused in financial terms.

It is widely recognised that climate funding needs to come from both public and private sources. But, according to the United Kingdom-based analysts Carbon Brief, negotiators at this year's United Nations climate conference in Paris will have to work out how to scale up financial contributions, and how to measure and verify such enormous flows of money.

Furthermore, while climate finance is supposed to be *additional* to existing development aid commitments, that is now difficult to assess, as almost all development needs to take climate change into account.

In the bigger climate-finance picture – including spending on mitigation and adaptation in the developed world – global climate finance flows dropped from 2011 (US\$364 billion) to 2013 (US\$331 billion), according to the Climate Policy Initiative. This is disturbing when the International Energy Agency estimates we need to spend an additional US\$1,100 billion a year on low-carbon investments in the energy sector alone.

Figure 5 indicates the scale of relative climate finance flows, as well as the uncertainty.





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Children at Caritas Oceania forum in Port Moresby, Papua New Guinea, September 2015

Climate finance flows into the Pacific

Pacific Island countries have highlighted their climate-change adaptation concerns and needs through “National Communications” to the United Nations since 1999. Some also have National Adaptation Programmes of Action.

A November 2011 report, *Review of Current and Planned Adaptation Action: The Pacific*, says most projects have focused on capacity building, policy and planning, and research – though some were pioneering adaptation measures. “Only a few [countries] are implementing standalone projects tailored to meeting their individual, national adaptation needs.”

A June 2015 review of the two frameworks that have guided disaster risk reduction and climate change responses in the Pacific over the last decade³⁸ concluded that progress had been made in mainstreaming climate change and disaster risk management concerns, also in climate change and hazard data collection, and observation and early warning systems, and good mechanisms have emerged for sharing information.

However, the review found that priorities and needs have been largely driven by overseas donors and targeted funds, rather than needs on the ground. There were also problems with coordination, cooperation and coherence. There has been limited systematic monitoring and evaluation of programmes at the national and regional level, and consequently limited use of lessons learnt.

The two earlier frameworks have this year been superseded by the Strategy for Disaster and Climate Resilient Development in the Pacific, which will promote *integrated* development in the region for climate change and disaster risk.

The marginalisation of Pacific climate funding is shown by the fact that the first biennial assessment and overview of climate finance flows by the United Nations Framework Convention on Climate Change’s Standing Committee on Finance (released December 2014) lumps Asia and the Pacific together. There is no breakdown or separate discussion of climate finance quantity and quality in the Pacific.

However, the independent Climate Funds Update website estimates that from 2003 to 2014, the smaller Pacific island states³⁹ received about US\$155 million “mostly for adaptation activities”. This represented about 4.6 per cent of public funds allocated to the Asia-Pacific region as a whole, through 22 separate climate funds and initiatives in the region.

The difficulties of measuring and the *different interpretations* available for climate finance are shown by these different figures from different organisations monitoring Pacific climate finance:

	Pacific Climate Change Portal (PCCP)	Climate Funds Update (CFU)	OECD
Pacific Climate Finance Approved in 2013	\$96 million	\$74 million	\$474 million

(The Pacific Climate Change Portal is run by the South Pacific Regional Environment Programme, and tracks bilateral and multilateral climate funding to the Pacific. The Climate Funds Update is an independent global climate financing monitoring organisation, a joint initiative of Heinrich Böll Stiftung (HBF) and the Overseas Development Institute (ODI).)

³⁸ Secretariat of the Pacific Community: *Compendium of Case Studies on Climate and Disaster Resilient Development in the Pacific*, 2015.

³⁹ Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

New Zealand climate finance in the Pacific

New Zealand's overseas aid to Pacific countries focuses on "sustainable economic development". Climate-change adaptation and mitigation outcomes are often delivered as an adjunct to other purposes such as fisheries or transport development. In these cases, the climate contribution is deemed 'significant', and the climate funding component rated as 30 per cent. If climate outcomes are the principal reason for the project, then the climate funding component is 100 per cent. The Ministry of Foreign Affairs and Trade (MFAT) uses an interpretation of OECD definitions of climate finance.

Government funding for climate-change related projects focuses on bilateral grants to individual countries, rather than multilateral programmes involving several countries. Caritas supports this approach because of the urgency of the need in Oceania, provided our directly funded projects prioritise the poor and most vulnerable people.

New Zealand was among those countries that reported it met its Fast Start Finance (2010-2012) commitments: spending NZ\$90.34 million in the three years to 30 June 2013 on water security, energy security and disaster resilience for communities and infrastructure in the Pacific. New Zealand reported that 40 per cent of its funding went to adaptation activities, and just over half to the small island states and least-developed countries of the Pacific.

Since then, its annual climate funding has risen to about \$55-60 million a year (Table 5).

Table 5: New Zealand climate finance 2012–2015

Year ending	TOTAL NZ climate finance to world	Pacific component		
		Pacific (all)	% of overall	Regional/multi-country
June 2013	\$38 m	\$18.4 m	48.4	\$6.5 m
June 2014	\$60 m	\$46.2 m	77	\$6.7 m
June 2015	\$56 m	\$45.6 m	81.4	\$6.4 m

(Source: MFAT.)

Caritas considers the proportion of climate finance spent on the Pacific is about right (80 per cent), but the amount should be increasing year on year, given the extent of the problem and Aotearoa New Zealand's deep obligations to our Pacific neighbours. In fact, New Zealand's overall aid budget should be expanding significantly, given that our current level of 0.25% of Gross National Product (GNP) falls well below the committed international responsibilities of wealthier countries to give 0.7 per cent of their GNP as overseas aid.

However, while quantity is important, so too is quality, and an initial analysis of New Zealand's 'climate change' projects raises many questions.

Assessing New Zealand climate funding in the Pacific

Caritas had a closer look at the kind of projects our 'climate dollars' are supporting.⁴⁰ Most projects fell within the 'significant' (30 per cent) rather than 'principal' (100 per cent) climate funding allocation. In the table below, the 'Caritas assessment' is our assessment on where a project sits on three broad categories:

'Repairing the damage': largely emergency recovery programmes – though they may 'build back better' to help residents become more resilient, their primary focus is on fixing up the damage cause by cyclones or other disasters.

'Business as usual': includes projects such as infrastructure upgrades to roads, wharfs and airports; and economic development in fisheries, forestry and tourism; as well as electricity network upgrades, and some environmental enhancement projects where the 'climate change' component is not clear.

'Building the new': includes projects such as renewable energy investments.

Caritas commends the New Zealand government for supporting renewable energy in the Pacific – especially such projects as installation of solar power on some of the outer islands of the Cook Islands and Tuvalu. However, we have questions about whether many other projects provide climate change-related benefits to the people that need it most.

Table 6: Analysis of New Zealand climate funding in the Pacific 2012-2015

TOTAL CLIMATE CHANGE (CC) COMPONENT	Climate change component (MFAT)		Caritas Assessment of Value			
	CC – Principal	CC – Significant	Repairing the damage	Business as usual	Building the new	(Unable to determine)
\$102,237,104	\$52,179,570	\$24,576,534	\$7,980,485	\$36,975,937	\$46,742,200	\$1,870,698

Note: Amounts and analysis of project types are based on International Aid Transparency Initiative (IATI) data sheets available from www.aid.govt.nz (last updated February 2015). Much of the data for 2014/15 are based on budgeted figures.

Signs of (little) progress

GREENPEACE



PAUL HARING/CATHOLIC NEWS SERVICE

(Left): In July 2015, Greenpeace protestors highlighted the New Zealand government's inaction on climate change by repeating a protest of 20 years ago – putting solar panels on the roof of Parliament. The Vatican installed solar panels in 2008, under Pope Benedict XVI.

40 Ministry of Foreign Affairs and Trade data at www.aid.govt.nz.

Cook Islands: Power to the people – sort of

NZAID dollars are helping the Cook Islands achieve 100 per cent renewable electricity generation by 2020. Solar power installation for the Northern Cook Islands group was welcomed by islanders, who previously had diesel generation for 12 hours a day.

On most of the islands, a central solar farm is supplying an electrical grid. However, some felt a decentralised system – each house powered by its own solar panels – would have been better, and that there could have had more local involvement.

Peter Teirney, Manager of the Cook Islands' Development Coordination Division, however, says there were delays in seeking local procurement. "After two years of tendering, the Cook Islands had not been able to award a contract for construction," and his division had to intervene. The main contract ultimately went to New Zealand company PowerSmart.

He says the grid system provides the same quality as for the main islands of Rarotonga and Aitutaki and the project will upskill and build the capacity of the local power company.

Director of the Renewable Energy Development Division, Tangi Tereapii, says a central grid system provides more power – people can use more appliances. "There are also opportunities for businesses to grow, for economic development."

Some people said 24-hour power could threaten communal ways of living. For example, more TV watching, while greater access to freezers means people may fish only once a week and share food less.

However, Chair of the Aronga Mana (Island Chiefs) Pio Ravarua says 24-hour power and streetlights has had a positive impact on local lifestyle. "People are buying freezers and other electrical goods now. We just have to wait and see how much impact that has on the cultural side of things."

His main concern is about the future: batteries in the new project will need replacing after 10–12 years. And, "although some rustproof materials such as aluminium and stainless steel were used during construction, not everything used was of the same marine environment grade."

Pio's wife Pati is Island Executive Officer, and says life is easier for people now they don't need to bring in drums of fuel to feed diesel generators. But people won't know what their longer-term

power rate will be until the island governments and central government agree on a permanent tariff – probably next year, after the solar power scheme for the Southern Group is rolled out.

Aotearoa New Zealand company PowerSmart landed the contract – and the equipment – to install solar power stations and grids for six islands in the Cook Islands northern group – completed in June 2015.

COOK ISLANDS TIMES





Conclusion

There is a huge global endeavour in trying to accurately “measure, report & verify” climate funding. But are our attempts to “fix climate change” with financial flows making us lose sight of the ultimate goal: protection of people and planet?

There is also irony in the New Zealand government promoting and funding sustainable energy in the Pacific, but not getting its own house in order.

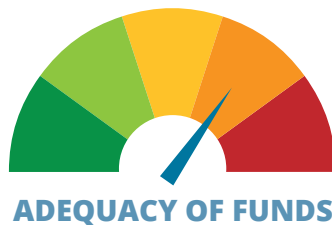
When the United Nations Security Council debated the challenges of small island states in July 2015, New Zealand Foreign Affairs Minister Murray McCully noted the rapid progress of Pacific island states to transform their dependence on diesel-generated electricity to renewable sources – in many cases with New Zealand help. “When you are small, you can make things happen quickly,” he said.

We would welcome New Zealand applying this principle at home by proposing significant and meaningful cuts in carbon emissions and more rapidly promoting renewable energy.

As Pope Francis says, “Many of those who possess more resources and economic or political power seem mostly to be concerned with masking the problems or concealing their symptoms, simply making efforts to reduce some of the negative impacts of climate change. However, many of these symptoms indicate that such effects will continue to worsen if we continue with current models of production and consumption.” (*Laudato Si'*, para 26).

CARITAS INDICATOR

Our assessment of the adequacy and quality of climate finance in Oceania 2015



■ VERY GOOD
 ■ GOOD
 ■ SATISFACTORY
 ■ INADEQUATE
 ■ WOEFULLY INADEQUATE



Recommendations

- The world community needs to agree on a universal and accepted definition for what constitutes climate finance.
- The New Zealand and Australian governments must think beyond national interests and strengthen their carbon emission reduction targets, and provide clear pathways to achieve them.
- The New Zealand and Australian governments need to invest in environmentally and socially beneficial initiatives in New Zealand and Oceania, and move away from financially supporting or subsidising the oil and gas industry.
- New Zealand needs to significantly increase funding for climate-change mitigation, adaptation and disaster-risk reduction in the Pacific, and develop criteria for targeting the most vulnerable people.
- The New Zealand government's climate change allocations must move beyond bolstering business-as-usual, and support a new model of development that upholds the poor, addresses inequality and protects the Earth for future generations.
- Climate finance must be additional to existing development assistance commitments.
- National governments in Oceania, donor countries and funding bodies must ensure sufficient financial and logistical support to implement fully and effectively the new Strategy for Disaster and Climate Resilient Development in the Pacific approved by the Pacific Forum in September 2015.
- The climate agreement to be concluded in Paris in December must at a minimum:
 - set us on a long-term, low-carbon, climate-resilient pathway to no more than 1.5°C warming above pre-industrial levels
 - provide a roadmap on climate finance
 - use a robust accounting system
 - provide a framework for action on adaptation that supports the most vulnerable.

We need to grow in the conviction that a decrease in the pace of production and consumption can at times give rise to another form of progress and development. Efforts to promote a sustainable use of natural resources are not a waste of money, but rather an investment capable of providing other economic benefits in the medium term... It is a matter of openness to different possibilities which do not involve stifling human creativity and its ideals of progress, but rather directing that energy along new channels. – LAUDATO SI', PARA 191.

The Carteret Islanders: Sailing on their own

In the absence of official climate funding, the Carteret Islanders of Papua New Guinea have taken their climate future in their own hands. Guided by Ursula Rakova as Director of their community organisation Tulele Peisa, this small community of 2,700 people are among the first in the world to face relocation because of sea-level rise. They have relied on their own tenacity and ingenuity, and the support of the local Catholic Church and charities such as Caritas and Oxfam.

Ursula says in a short time, each of the eight families that have moved to the mainland has planted 300 cocoa trees. "If you really manage these 300 cocoa trees, you are able to harvest four bags every month after five years of the growth of these trees," says Ursula. "So far we've planted about 6,500 cocoa trees on 14 hectares of land."

Together, they have also planted a mini-forest of indigenous trees: more than three hectares in soft and hard wood trees, nut trees, fruit trees and palms. The trees will provide timber, food and medicine.

"Hornbills are beginning to come back and nest," adds Ursula, "That's one of the things that really encourages us to come back. ... We are planting short, medium and long-term good crops and want to build our own seedbank."

They are grateful for Caritas providing a dryer for their cocoa beans, and training staff. But, "We are tired of chasing donors," says Ursula, and she wants to make her people self-sufficient. "We are trying to give our islanders new hope, emphasising mitigation, resilience and adaptation.

"We hardly have bicycles on the island [or] generators on the island, but we are listening to the music of what others have created. When I started this programme, I was really, really angry about what my people were going through. But over the years I know that I just can't sit down and become angry. I've got to tell the world: this is happening and we are all in this together. We all need to walk our talk. If we are going to look at Mother Earth as something that's going to support us, we've got to protect this Mother Earth, and we will all have to do it together."⁴¹

TULELE PEISA



Sunset in the Carteret Islands.



Ursula Rakova at Tinputz.

CARITAS

41 Some of Ursula's quotes from Interview on Sunday Morning with Wallace Chapman, Radio New Zealand National, 5 July 2015.



Conclusion

All is not lost. Human beings, while capable of the worst, are also capable of rising above themselves, choosing again what is good, and making a new start. – LAUDATO SI', PARA 205.

Our world and our region face significant environmental challenges. Communities across Oceania are on the front lines of these struggles. Many people in Oceania are battling enormous forces which are not of their making.

Our first contribution is to express solidarity through our awareness of the issues being faced and the many ways that people are responding. The peoples of the Pacific deserve the attention and support of us all – as individuals and families; as parishes, schools and local groups; as national and regional decision makers; and as a global community. We need to listen attentively to the stories and experiences of people living with the impacts of climate change.

The communities and stories in this report need to be foremost in our minds as decisions are made as a global community at the United Nations Conference on Climate Change in December; and they need to be in our consciousness through the environmental habits and consumer decisions we each make every day.

Our report shows that it has been a **'severe'** year for **extreme weather** in Oceania. Cyclone Pam had the largest and most widespread impact, but it was only one of a number of super-cyclones to affect the region. Smaller but unusually intense rainfall events were fatal in a number of countries, while an El Niño weather cycle in the second half of the year threatens to be one of the strongest ever. Past experience shows it takes years to recover from extreme weather events, and as they accumulate one on top of the other, they tax people's ability to cope and recover.

Coastal erosion and inundation is having a **high** impact in the Pacific. Places such as Kiribati, Tuvalu and the low-lying islands of Papua New Guinea experienced more frequent and stronger King tides, in addition to the impact of storms and super-cyclones. Coastal inundations of low-lying areas are happening with more frequency, and it is becoming harder for people to 'bounce-back'.

While there often appears to be funding for repair and relocation of major infrastructure, such as roads and public sea walls, it is clear from ordinary people's experience that they are largely having to fend for themselves in rebuilding sea walls or organise their own relocations – and pay for it themselves.

While **food** is usually still in abundance, local supplies are vulnerable to extreme events such as the current El Niño. There is insufficient formal monitoring of the longer-term impacts of the creeping changes to food supply from changing seasonal and growth patterns; loss of coastal gardens and food trees through coastal inundation, salinization and erosion; and the contamination or loss of agricultural lands. There are declining yields from coastal fishing in particular due to overfishing and environmental deterioration, but there are also threats to deep sea fishing resources as they are being overfished. Degradation of reefs is leading to higher incidences of ciguatera poisoning and threats to other marine life.

Water is also vulnerable to one-off events, and there are problems with pollution, contamination and water wastage. Water supplies for coral atolls are particularly vulnerable. Our assessment is that the current impact of environmental factors on food and water is **high**.

The impacts in Oceania of offshore mining and drilling have so far been relatively localised and small. However, there is much uncertainty and cause for concern. We are particularly concerned



at a lack of transparency and openness in some applications for **offshore mining and drilling**, and inadequacy of monitoring. Greater transparency is required around the impacts of seabed mining, and how much is known or not known about deep sea environments. While we rate the impacts so far as **moderate**, we join community concern in the Pacific because of the increased interest in seabed mining, and the current inadequate controls.

There is also a lot of murkiness around **climate funding**, with a lack of clear definitions and donors largely determining what is 'climate finance' and where their dollars go. There is a concern that focusing on fixing climate change through financial flows could make us lose sign of the ultimate goal, which is to protect people and planet.

New Zealand's development assistance in promoting and funding sustainable energy in the Pacific is admirable, and should be duplicated at home as we need more determined efforts to minimise carbon emissions. However, the New Zealand government also needs to ensure that more of its climate finance and aid dollars go towards projects and programmes that assist the most vulnerable communities to adapt to climate change, rather than 'business as usual' projects.

Though some of the newly released funds are encouraging, in most cases, they are not going to the people who need it most – we rate that as **woefully inadequate**.

The threats to human and environmental wellbeing posed by climate change and other environmental changes demand our urgent and immediate attention. From decision makers at global and national levels, to communities and families at a local level, there is more that we can and must do.

BRETT PHIBBS/NZ HERALD



A cyclist weathers a storm on Tamaki Drive, Auckland on 1 September 2015 that partially closed the road. Individuals, communities, and local and national governments around Oceania face the challenges of increasingly extreme weather coupled with rising seas.



Final recommendations

For our global community

The world community must negotiate a **strong, legally binding, and truly global climate agreement** at the United Nations climate conference in Paris in December 2015. This agreement must:

- support strong, coordinated mitigation measures to ultimately keep the global temperature increase below 1.5 degree Celsius relative to pre-industrial levels;
- promote a framework for adaptation for communities *already affected* by climate change, that supports the most vulnerable.
- listen to the voices of the poor and those most affected by climate change, and ensure their ongoing participation in decisions about their future;
- recognise basic universal human rights, especially the right to adequate food and water;
- provide clarity and commitment on climate finance, with a robust accounting system, to ensure there is adequate and predictable finance and support for less developed countries to minimise their own carbon emissions and adapt to climate change.

For national and regional governments and decision makers

- The New Zealand and Australian governments must think beyond national interests to strengthen their carbon emission reduction targets, and provide clear pathways to achieve them.
- All Oceania governments must invest in renewable energy, rather than financially encourage further fossil fuel exploration and extraction.
- Donor countries and international funding bodies need to progressively increase funding for climate change mitigation, adaptation and disaster risk reduction in the Pacific, ensuring the funding reaches the most vulnerable communities.
- There is a need for greater monitoring and reporting of the impact of environmental changes in Oceania. Governments, international bodies and civil society need to develop Sustainable Development Goal (SDG) indicators for the Pacific taking into account the particular environmental aspects of our region, and building on Pacific culture and values.
- Regulatory regimes, especially concerning offshore mining, drilling and exploration, must ensure full consultation with communities, and ensure effective monitoring of impacts.

For local groups, families and individuals

- Actively participate as citizens in matters being decided at international, regional and national levels by making views known to local decision makers.
- Support local and regional environmental projects, in local neighbourhoods, and through development and humanitarian projects in the region.
- Develop small daily habits of ecological citizenship – Pope Francis suggests such matters as putting on extra clothing rather than a heater, avoiding the use of plastic and paper, reducing water consumption, recycling resources, using public transport or carpooling, turning off unnecessary lights, planting trees, and showing care for other living beings. “We must not think that these efforts are not going to change the world.” (*Laudato Si'*, para 212.)

Pope Francis encourages us to undertake this work with optimism and energy. “Let us sing as we go. May our struggles and our concern for this planet never take away the joy of our hope.” (*Laudato Si'*, para 244.)



Glossary

Ciguatera poisoning – A type of food poisoning resulting from eating fish that has consumed toxic algae associated with dead or damaged coral. The toxin is harmless to fish, but poisonous to humans. It can cause nausea, vomiting, diarrhoea, muscle pain and, rarely, death.

El Niño – A periodic warming of the central and eastern equatorial Pacific Ocean, which happens every few years. It affects weather patterns around the globe. In Oceania, it generally leads to drier and warmer weather in the western Pacific including parts of Australia and New Zealand, and the risk of more and larger cyclones.

Free, prior and informed consent – With regard to seeking consent for actions from indigenous or local communities, it consists of these components:

Free – free from force, intimidation, manipulation, coercion or pressure by governments or companies

Prior – obtained prior to government authorisations, allocation of exploration permits, operating licences, etc.

Informed – all relevant information is presented to communities and civil society accurately, and in an accessible manner independent of vested interests.

Consent – communities and civil society can say “yes” or “no” to a project, at each stage of that project, with conditions if necessary; in accordance with community decision-making processes.

(based on United Nations Declaration of the Rights of Indigenous Peoples, 2007)

King tide – colloquial term in Oceania for an especially high tide. May often refer to a perigean spring tide, but may also apply to a high tide made higher through a storm or local weather conditions.

Precautionary Principle – “activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed.” (United Nations World Charter For Nature, 1982). (Note: This prioritises *the protection of the well-being of communities and the environment* and identifies that the *developer* bears responsibility for proving that a development is not harmful.)

Spring tide – the highest tides of the month, occurring every 14 days when Moon, Sun and Earth are in a line. The height varies, but is highest when the Moon is closest to the Earth in its orbit (‘perigee’): this happens 3-4 times a year, and results in a “**perigean spring tide**”. The largest of these normally falls around 2 January – when the Earth is also closest to the Sun in its elliptical orbit; and the Earth, Moon and Sun are in a line.

Storm surge – an abnormally high body of water, caused by a low-pressure system in the area, such as a storm or cyclone, and often associated with large waves or swells.

Sustainable Development Goals (SDGs) – a set of 17 universal goals agreed by the United Nations in September 2015, to guide sustainable global development for the next 15 years. They supersede and expand upon the Millennium Development Goals (MDGs).



May our struggles
and our concern
for this planet
never take away
the joy of our hope.

Laudato Si', para 244



A CARTERET ISLANDER LIVING IN TINPUTZ, BOUGAINVILLE.





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