



Pacific
Community
Communauté
du Pacifique

Geoscience, Energy and Maritime Division

Business Plan





TABLE OF CONTENTS

GEOSCIENCE, ENERGY & MARITIME (GEM) DIVISION	4
KEY AREAS	5
GEM's role: Science to sustainable development	6
STRUCTURE OF BUSINESS PLAN	6
WATER AND SANITATION	7
Implication for Pacific Islands	8
GEM Scientific and Technical Application to WASH	9
Water is life: providing access to WASH for rural and remote communities	10
INTEGRATED DISASTER AND CLIMATE RESILIENCE	11
Implication for Pacific Islands	12
GEM's approach to integrated disaster risk reduction & climate change adaptation	13
Localised disaster preparedness and rapid response established in Vanuatu	14
MARITIME AFFAIRS & SAFETY	17
Implication for Pacific Islands	18
GEM Scientific and Technical Application to Maritime Affairs & Safety	18
Maritime Safety Critical for our Blue Pacific	20
OCEAN SCIENCE	21
Implication to Pacific Islands	22
GEM Scientific and Technical Application to Ocean Science	23
New technology enables early-warning systems and forecasting of swell-driven inundation in Fiji	24
SUSTAINABLE ENERGY SECURITY	25
Implication for Pacific Islands	26
GEM Scientific and Technical Application to Sustainable Energy Security	27
Low-carbon development reduces greenhouse gas emissions from ports in Fiji and Solomon Islands	28
SUSTAINABLE GEORESOURCES	29
Implication for Pacific Islands	30
GEM Scientific and Technical Application to Sustainable Georesources	30
Baseline assessment of development minerals in Fiji	31
EARTH AND MARINE OBSERVATION	33
Implication for Pacific Islands	34
GEM Scientific and Technical Application to Earth & Marine Observation	34
Pacific hailed global leader in determining shared maritime boundaries	36
ANNEXES	38
GEM Monitoring and Evaluation Framework	38

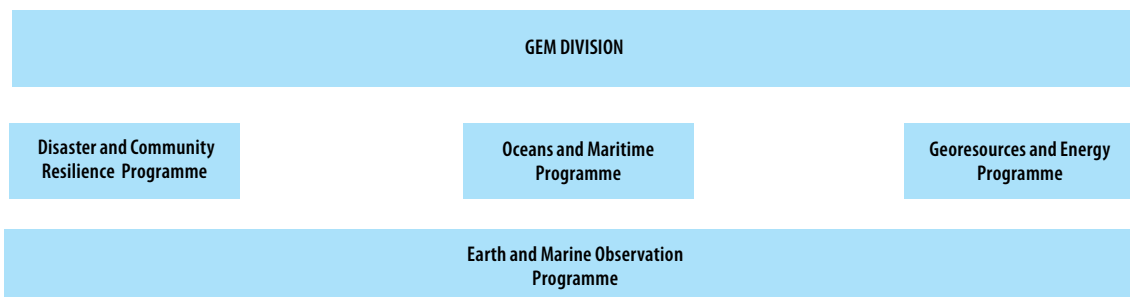
GEOSCIENCE, ENERGY & MARITIME (GEM) DIVISION

The Geoscience, Energy and Maritime (GEM) Division provides technical and scientific solutions to Pacific Island Countries and Territories (PICTS) in the three key sustainable development areas: Oceans and Maritime, Georesources and Energy, Disaster and Community Resilience.

The Geoscience, Energy & Maritime Division (GEM) uses scientific and technical innovations to develop applied solutions that help overcome development challenges in the Pacific. Our strength comes from an innate understanding of the region, built-upon almost 50 years of expertise working alongside Pacific people, Member governments and Partners.

The GEM Division was created after a merger between SPC's Economic Development Division (EDD) and the Geosciences Division (GSD) in 2017. From 1972-2011 the Division was known as SOPAC or the South Pacific Applied Geoscience Commission before joining SPC in 2011.

GEM work is supported by its long history of developing applied scientific and technical solutions to overcome challenges faced across our Blue Pacific. Broadly, these include increased access to water and sanitation, understanding and overcoming the impacts of climate change and disaster risk, sustainable approaches to energy security and management of our resources along with increased ocean science, maritime safety and more relevant information for decision makers.



KEY AREAS



Earth & Marine
Observations



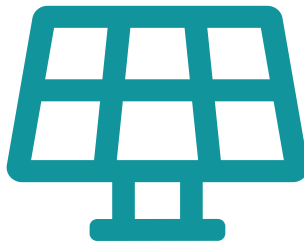
Integrated Disaster and
Climate Resilience



Maritime Affairs
and Safety



Ocean Science



Sustainable Energy
Security



Sustainable
Georesources



Water and
Sanitation

GEM's role: Science to sustainable development

As a large multi sector division within SPC, GEM's capacity to convene and coordinate the scientific and technical work alongside our members drives innovative solutions to the challenges and risks they face and is core to our capacity and underpins GEM's future work.

The Division is also one of the peak resilience scientific and technical agencies in the Pacific. It encompasses almost 50 years of expertise in developing innovative applied scientific and technical solutions to respond to the resilience challenges faced by its members and a key partner in the implementation of the Framework for Resilient Development in the Pacific (FRDP).

This division is critical in the integration of resilience through the use of informed scientific and technical actions, with every key goal of the Framework supported by each of the divisional programmes with programmatic approaches.

STRUCTURE OF THE BUSINESS PLAN

The chapters below are arranged per key work area outlining the scope of each area, the implications for the Pacific, and the technical and scientific applications of GEM's work along with some key outcomes achieved. The Results Framework, a program tool to measure our progress and impact through robust monitoring & evaluation strategies is also included outlining some key outcomes, Pacific-led innovations and learnings used to ensure we are addressing the needs of our Members.



A young boy in a white school uniform is drinking from a public water tap. He is holding the tap handle with his right hand. In the background, other children are waiting, and one person is washing their hands under the running water. The scene is outdoors with green foliage in the background.

WATER AND SANITATION

“Whilst all Pacific island countries have made some progress in water and sanitation, many of these efforts are not keeping up with population growth. The sheer magnitude of the task at hand requires **renewed efforts and reenergized partnerships** to secure our region’s water and sanitation future.” Dr. Colin Tukuitonga, SPC Director General”

Dr. Colin Tukuitonga,
SPC Director General”

Ensuring universal access to safe and affordable drinking water, as well as adequate sanitation is a critical resilient development issue for Pacific Small Islands Development States (SIDS), with profound implications for economic growth, public health, the environment and human rights.

Furthermore, water (surface water, groundwater and rainwater) is often the primary medium through which climate variability, climate change and natural hazards influence livelihoods and wellbeing of our Pacific people.

Over the past several years and as part of an integrated effort to not only address the impacts of climate change and disasters as well as enable broader resilient development in the Pacific, the Disaster and Community Resilience Programme (DCRP) within GEM has strengthened its investments and efforts in providing targeted action on water and sanitation now and into the future recognising the centrality and multiple impacts of this work in the region .

Implication for Pacific Islands

The Pacific region as a whole has made slow collective progress in achieving SDG6 Universal Access to Water & Sanitation and the Pacific is tracking worse than any other region in the world. The UN Joint Monitoring Programme data¹ recently released estimates 30% of the region's population lack access to at least basic sanitation facilities and 55% lack access to at least basic drinking water.



30% of Pacific population lack access to basic sanitation



55% of Pacific population lack access to basic drinking water facilities

There is a recognition however, there are large disparities within and between countries, across urban and rural areas and between populations. This is exacerbated in rural and peri-urban communities where water and sanitation resources are often limited and highly vulnerable to the impacts of human activity, natural hazards and climate change.

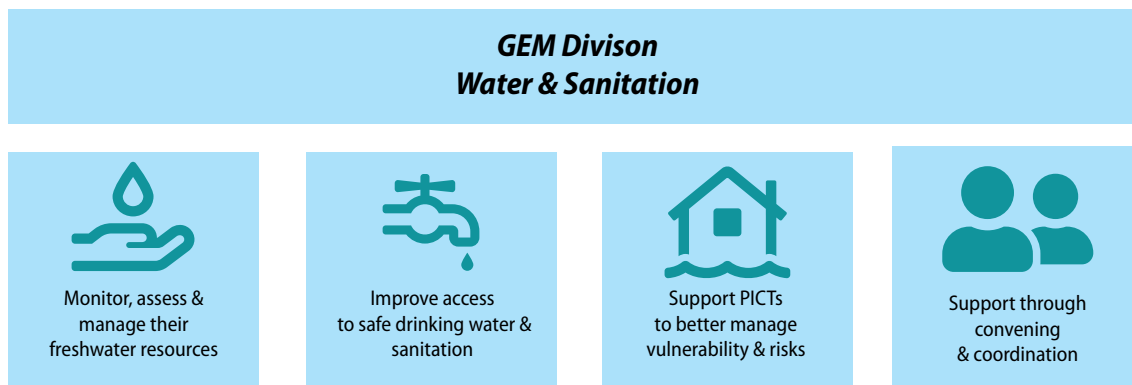
Further considerations include:

- In all Pacific countries affordability of drinking water and sanitation safety, security and sustainability is a challenge;
- Maintaining services across the region is disproportionately affected by water related disasters and the wide spread impacts of natural hazards and climate change;
- National disaster preparedness and response efforts are severely constrained by local capacity to measure, understand and manage water resources and water-related risk;
- Despite the magnitude of the issue low political prioritisation for required significant transformational change.

¹UN Joint Monitoring Programme Data based on 2017 estimates for country reporting analysed by UNICEF, SPC and WHO.

GEM Scientific and Technical Application to WASH

As an important component of our broader resilience efforts, we work across the region to support our members to:



The GEM Division is the regional agency mandated to support Pacific Small Island Developing States (SIDS) efforts in water and sanitation and have the long term understanding, coverage and convening power to represent the water and sanitation issues of the region.

GEM has over the past years maintained a programme of water and sanitation support to Pacific SIDS through the development and delivery of work through technical support, capacity building, awareness, advocacy and governance related to the management of water resources, the provision of safe water supply and adequate sanitation services and more broadly strengthening water security in the region.

We are uniquely placed to link the disciplines of water resources management and water and sanitation services (a critical nexus in Pacific SIDS) and hold region-leading expertise in water resources monitoring and assessment (particularly with respect to groundwater) and water security and governance (particularly with respect to small islands).

GEM's work in Water and Sanitation includes :

- **Water Security and Governance** – supporting Pacific SIDS to sustainably manage water resources and sanitation services and manage risk
- **Hydrology for Resilience** – supporting Pacific SIDS to reduce the impacts of flood and drought
- **Appropriate technology** – supporting Pacific SIDS to secure access to sustainable water and sanitation technological solutions
- **Safe Water, Sanitation and Hygiene (WASH) Practice** – Supporting Pacific SIDS to reduce the impacts of water borne diseases
- **Communications, Knowledge and Behaviour Change** – supporting Pacific SIDS to build WASH-aware, resilient communities.
- **WASH Advocacy** – supporting Pacific SIDS in convening, consultation and multilayered advocacy actions to enable the change required to address obstacles to access to safe water and adequate sanitation in the pacific.

Water is life: Providing access to water and sanitation for rural and remote coastal communities



“For the first time in my life I can go to the toilet without carrying a bucket of water”, Rakera, 65 years. Kiebu Islet, Makin Island

Providing access to water and sanitation for rural and remote coastal communities



Water assessments completed in **35** Kiribati communities across **8** outer atolls to inform effective water and sanitation actions



Almost **10,000** people now have access to improved water and sanitation



All **17** island technicians trained to maintain, support and build relevant water systems

Rakera resides near a newly built compost toilet on an outer atoll in the Republic of Kiribati. This is the first time in her life she has had access to a toilet in her local community.

This work was completed under one of the large scale programmes implemented by the GEM Division. KIRIWATSAN II worked to understand the science to inform the best approaches for access to both safe and clean drinking water and effective sanitation services for remote atoll communities across 8 different outer islands and 35 Kiribati communities.

The project focused on capacity development on these islands and supported the training of 17 outer island technicians and community engagement from the science to implementation to ensure long term sustainability and resilience strengthening for these communities.

Funded: European Union

An aerial photograph showing the aftermath of a disaster in a tropical region. In the foreground, several palm trees have been uprooted or severely damaged, lying on the ground. To the right, a building with a blue roof is under construction or repair, with its wooden frame exposed. Another building with a red roof is partially visible below it. The ground is a mix of dirt and sparse vegetation. A large, semi-transparent teal shape is overlaid on the top left of the image, containing the title and quote.

INTEGRATED DISASTER AND CLIMATE RESILIENCE

"Through the concerted efforts of our Pacific Governments, Pacific intergovernmental organizations, civil society, private sector, community practitioners, we can and are working towards collectively building a safer and more resilient Pacific"

Dr. Audrey Aumua, SPC Deputy Director General. "

Driving integrated solutions to tackle both the risk faced by the Pacific in terms of disasters and the long-term impacts expected as a result of climate change is critical to the sustainability and resilience of Pacific people, cultures and countries.

The region is highly exposed to geophysical (including volcanic eruptions, earthquakes and tsunamis) and climate-related (such as cyclones, flooding, landslides and droughts)² natural hazards. In 2018, the Pacific was identified by the World Risk Report as the region with the highest disaster risk (from a five-year perspective), and the only region where its population's vulnerability to extreme natural events had risen. Vanuatu and Tonga were assessed to be the most vulnerable, with a further three Pacific island countries³ identified amongst the fifteen most vulnerable countries on earth⁴.

Pacific Island Countries recognise the challenges posed by climate change and disaster impacts are the same, and need to be addressed together to ensure both efficient implementation and maximum effect. This integrated approach is reinforced through the Framework for Resilient Development in the Pacific (FRDP): an integrated approach to address climate change and disasters endorsed by Pacific leaders in 2016, the FRDP provides high level strategic guidance to different stakeholder groups on how to enhance resilience to climate change and disasters, in ways that contribute to and are embedded in sustainable development.

Implication for Pacific Islands

Tackling, adapting to and mitigating the impact of climate change and the increased era of disaster risk associated with it is critical to the sustainable development of the Blue Pacific and the eradication of poverty and inequality. By building resilience and ensuring all development is risk-informed, countries and communities can protect against losses and simultaneously boost economic growth, create jobs and livelihoods, strengthen access to health and education, and ensure that no one is left behind.

At the national level, countries have progressed the integration of Disaster Risk Management (DRM) and Climate Change (CC) activities through the development of Joint National Action Plans for Climate Change and DRM, as well as other integrated and inclusive approaches which are leading globally in terms of holistic and integrated approaches. Regional cohesion around disaster preparedness, response and recovery is further strengthened through the Pacific Islands Emergency Management Alliance and investments around the Boe Declaration⁵.

Challenges in the Pacific are:

- Need to support end-to-end resilience actions that ensure the results are embedded and sustainable. This includes, for example, needing to closely involve Ministries of Finance and Planning to link resilience to resource allocation; taking time to map hazards and risks, and develop scenarios to inform actions;
- Ensuring investment in DRR and CCA infrastructure and equipment is as part of a broader package of risk-informed planned actions;
- Need to make disaster risk information more accessible from government down to household levels
- Multi-hazard early warning capacity. Aside from severe weather events including tropical cyclones, most countries do not have systems in place for forecasting, detecting and monitoring other key hazards.

²Holland, P., 2014, *Hydrometeorological Disasters in the Pacific – Statistical summary*. (SPC PR187)

https://library.wmo.int/pmb_ged/2014_spc-wmo-unisdr_hydrometeorological-disasters-pacific_en.pdf

³Solomon Islands (4th), Papua New Guinea (6th) and Fiji (15th).

⁴BÜNDNIS ENTWICKLUNG HILFT (2018) *World Risk Report 2018*. Berlin: Bündnis Entwicklung Hilft - <https://weltrisikobericht.de/english-2/>

⁵<https://www.forumsec.org/boe-declaration-on-regional-security/>

- Limited capacity to analyse the risks posed in order to develop actionable and targeted warning messages for the public and sectors.
- Limited access to appropriate technologies for disseminating advance warnings from disaster management offices to at risk communities.
- Requisite response by communities to warning messages, especially vulnerable groups.
- Emergency Management coordination as evidenced through several events.

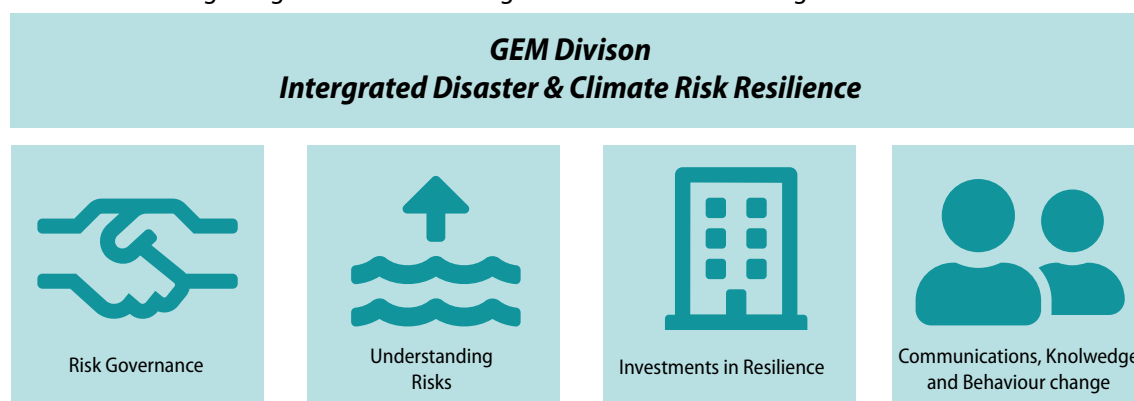
GEM's approach to integrated disaster risk reduction & climate change adaptation

The wisdom of this integrated thinking combined with scientific and evidence based action has guided the GEM Division to bring together its efforts for reducing risk and adaptation to climate change and disasters together.

The work is underpinned by the Framework for Resilient Development in the Pacific (FRDP), country priorities through integrated Disaster Risk Management and Climate Change Adaptation activities and based in understanding the hazard and risk through GEM's scientific and technical innovations.

We are the Pacific regional agency mandated by Pacific leaders to support the region's efforts in Disaster Risk Management and continue to have a long term understanding of the context and a key role in convening, coordinating and consolidating the regional DRM agenda guided by the FRDP across partnerships and applied science actions. Our work is linked to SDG 11 with multiple linkages and contributions to other SDGs such as poverty reduction and climate change.

SPCs work in integrating Disaster Risk Management and Climate Change include :



- **Risk Governance** – supporting Pacific SIDS to implement the FRDP and the actions of the Pacific Resilience Partnerships (PRP) as well as Climate and Disaster Risk financing dialogue;
- **Understanding Risks** – supporting Pacific countries to prioritise resilience interventions;
- **Investments in Resilience** – demonstrating evidence based investments in climate and disaster resilient infrastructure;
- **Capacity to manage Risk and Disaster** – strengthening in-country capacity of various government counterparts in some core competency areas of emergency and disaster management in the region.
- **Communications, Knowledge and Behaviour Change** – consolidating, enhancing and managing our Pacific resilience knowledge and information through a resilience platform that is relevant, timely and informed by decision makers.

Localised disaster preparedness and rapid response established in Vanuatu



©Vanuatu NDMO



2 Provincial Emergency Operation Centres in remote parts of Vanuatu



Fitted with communications equipment relevant for disaster



Training of Emergency Operation Centre teams



Shared learnings and standardisation across and between Pacific countries

Vanuatu is made up of 82 small islands spread across 1300 km of ocean, which makes it difficult to maintain access and communications to support humanitarian responses in a disaster. After Tropical Cyclone Pam slammed into Vanuatu in 2015, some key learnings became apparent in finding ways to ensure localised access to manage response efforts and an increased need to effectively communicate across the country during humanitarian incidents. Improved coordination points at provincial level were recommended as provinces lacked adequate facilities, equipment and capability to collect and disseminate information and supplies.

Localising disaster response through investments in resilience

Through the detailed Post Disaster Needs Assessment (PDNA) recommendation, SPC's Building Safety and Resilience in the Pacific (BSRP) project provided funding and project management support for the construction of two provincial emergency operation centres (PEOCs) in Malampa and Santo to address the need for local response capacity.

The centres were fitted with communication equipment. For consistency and standardisation throughout Vanuatu, the design of the PEOCs was based on the government's designs for two other PEOCs (World Bank funded) in consultation with the provincial government and National Disaster Management Office (NDMO).

The centres are designed to withstand cyclones and have a functional layout to accommodate a range of emergency response personnel. They are fully equipped (including for communications to national level) and have facilities for men and women and access for people with a disability. In 'peacetime', the EOCs are now supporting disaster preparedness activities with local communities and they act as a hub for data collection, analysis, communication and coordination with local stakeholders, provincial authorities, the National Emergency Operation Centre (NEOC) and NDMO. They are also a place for pre-positioning supplies and equipment ahead of distribution.

The effectiveness of the centres was tested during the 2018 volcanic eruption in Ambae leading to the evacuation of 60% of the island's population. The PEOC was activated and became a hub for the humanitarian event as the communities were relocated to a neighbouring area of Maewo

Impact of local disaster response capacity

This operation of the PEOC has provided evidence of how investment in appropriate workspaces can positively impact practices, including by enabling collaboration. The design has been shown to be effective and is now being considered by Tonga for its outer island EOCs. Standardising the EOC design greatly facilitates shared peer-to-peer learning and support opportunities across the region, particularly where surge support has to be brought in.

A training course 'Working in an EOC' has also been accredited by SPC's Educational Quality and Assessment Programme. It will be used for both train-the-trainer and in-country courses across the Pacific region, supported by BSRP and the Pacific Islands Emergency Management Alliance (PIEMA) project. The training will support standardisation of skillsets in EOCs and build capacity through peer-to-peer exchange.

Investment in infrastructure and equipment should not occur in a vacuum but in an enabling regulatory environment that empowers all stakeholders involved in disaster preparedness and response, and that clarifies lines of responsibility.

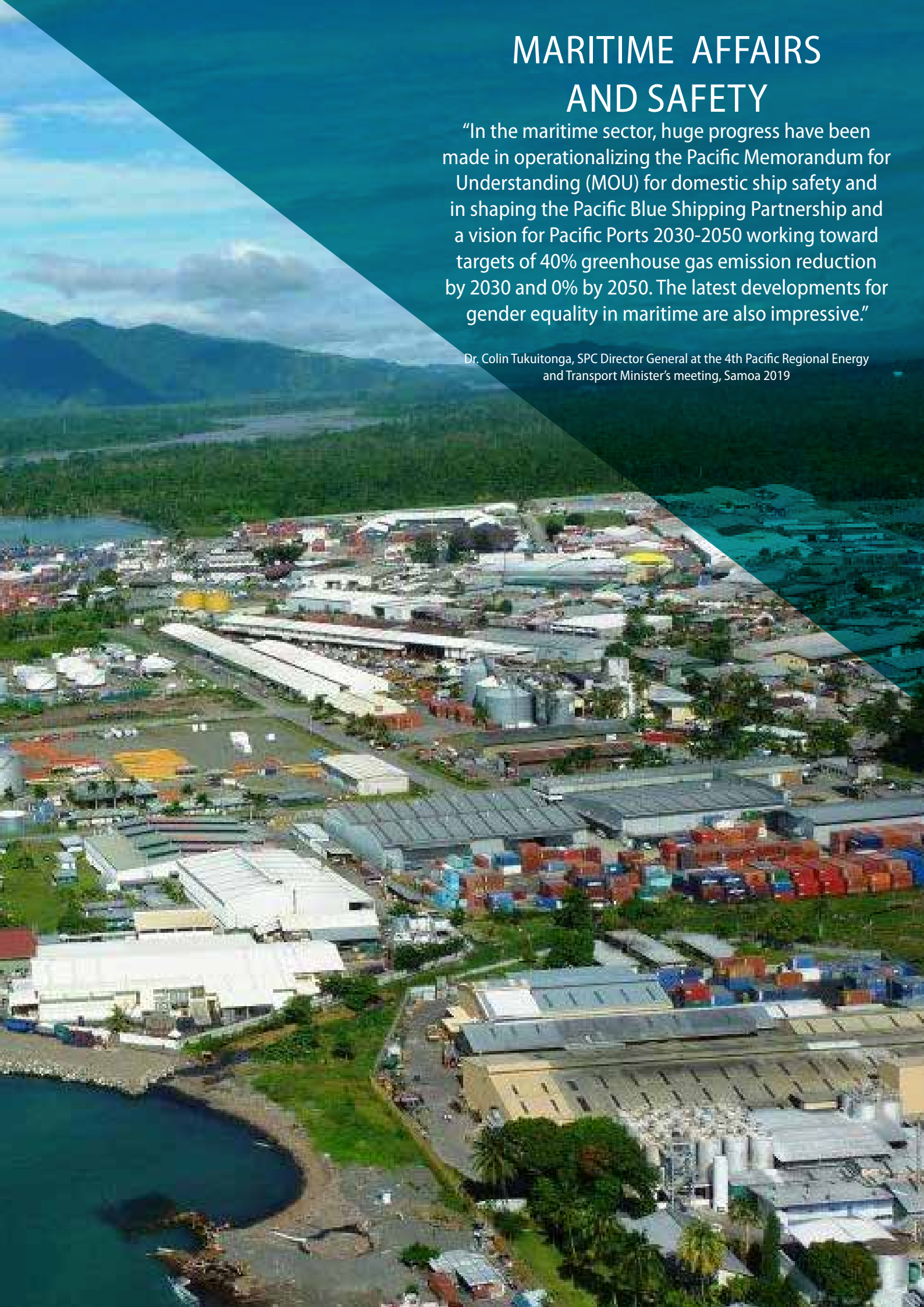
Donors: European Union, World Bank, KfW



MARITIME AFFAIRS AND SAFETY

"In the maritime sector, huge progress have been made in operationalizing the Pacific Memorandum for Understanding (MOU) for domestic ship safety and in shaping the Pacific Blue Shipping Partnership and a vision for Pacific Ports 2030-2050 working toward targets of 40% greenhouse gas emission reduction by 2030 and 0% by 2050. The latest developments for gender equality in maritime are also impressive."

Dr. Colin Tukuitonga, SPC Director General at the 4th Pacific Regional Energy and Transport Minister's meeting, Samoa 2019



The maritime sector is the backbone of domestic inter-island transport, often providing the only access to and from smaller outer islands to meet key socio-economic needs in areas such as education, healthcare, and emergency services during catastrophic natural events (cyclones, droughts, etc). Globally, the sector is a key pillar of our economy however its relevance for our Blue Pacific is pertinent based on our distant geography, vast oceanscape and reliance on fisheries for food security and economic growth regionally.

Almost 50% of the Pacific's population resides in outer island environments so ensuring access to markets, healthcare, education, safe transport and general shipping services is a critical lifeline for our region.

Domestic shipping for many of these communities also usually involves the use of small vessels that service main governmental or commercial centres and other islands within a country. These vessels are not bound by current international standards and therefore increased safety, robust enforcement authorities within Pacific countries and sustainable shipping is pertinent for the region.

Implication for Pacific Islands

The heavy reliance on the maritime transport services to meet social and economic needs as well as the primary means for movement of people, underscores the importance of ensuring the maritime industry operates sustainably in a safe, secure and efficient environment. Since 2000, several major accidents have recalled the need for improving the management of safety on board domestic vessels in the Pacific. Consistent causes worldwide are: overloaded vessels, unseaworthy vessels and poor lookout, which has also been confirmed in recent maritime accidents in the Pacific.

Further considerations include but are not limited to the following:

- Improved energy efficiency of maritime transport and port operations
- Inclusivity of maritime careers- the maritime sector is only 2% women
- Safety of Navigation, including updated navigational charts and appropriate maintenance of Aids to Navigation such as lighthouses, buoys and channel markers
- PIC compliance with the Safety of Life at Sea Convention (SOLAS)
- Capacity Development to improve career pathways, compliance and skills

GEM Scientific and Technical Application to Maritime Affairs & Safety

The Oceans and Maritime Program in the GEM Division supports countries across the region to improve the safety of navigation, the sustainability of maritime transport, and the capacity of Pacific Maritime agencies and companies to comply with international obligations and strengthen maritime governance. We are the regional agency mandated to support Pacific maritime transport aspirations and are home to the regional Maritime Technology Cooperation Centre (MTCC).

GEM introduced the Pacific Islands Domestic Ships Safety (PIDSS) programme in 2010, which aims to strengthen maritime safety of domestic shipping and foster safety culture in PICTs. This programme was piloted in Tonga and Kiribati in 2010, following the tragic maritime accidents in 2009 leading to significant loss of lives at sea and this work is being further consolidated to improve maritime safety and pollution prevention in Pacific domestic shipping.

Primarily through the harmonisation and implementation of maritime laws, effective management of safety and pollution prevention on board domestic vessels and up-keeping and maintenance of shipboard safety equipment, and building capacity of maritime administrations to assume their responsibilities and verify compliance of registered ships.

GEM's work in Maritime Safety and Security includes :

GEM Divison Maritime Affairs and Safety



Good Maritime
Governance



Sustainable Maritime
Transport and Safe Navigation



Improved Maritime
Capacity



Maritime Safety Critical for our Blue Pacific



Improved safety of domestic vessels and understanding of fuel consumption data for the Pacific



Development of and implementation of standard operating procedures to improve safety and shipping services



Improved capacity and increased safety of vessels through inspections

Through the Pacific Islands Domestic Ships Safety Programme (PIDSS) a standardisation of operating procedures for domestic shipping was developed and implemented to improve maritime safety. This work is pertinent for the Pacific as domestic shipping vessels are not bound by the same regulations at international levels however it's a main method of transport for almost 50% of our Pacific population who live on outer islands.

This work was developed after tragic maritime incidents in Kiribati and Tonga and since 2010 has improved the results of ship inspections on some vessels that are implementing and following the standard operating procedures. Ship owners have also become more aware of their responsibility and with recent data showing the cost savings of reduced fuel consumption through energy saving measures, ship operators are increasingly engaged in reducing greenhouse gas emissions produced by their vessels.

This work has led to improved data on fuel consumption, increased safety measures for participating vessels and increased standardisation of operation procedures to drive a safer and more resilient Pacific region for the lives and livelihoods of our people.

A full-page background image showing two divers underwater. The diver in the foreground is wearing a black wetsuit and a mask, looking down. The diver in the background is wearing a white long-sleeved shirt and a mask, looking towards the camera. They are both equipped with scuba gear, including tanks and hoses. The water is clear and blue, with some coral visible in the background.

OCEAN SCIENCE

"A recent assessment by the UN concluded that the ocean is failing, with declining biodiversity and fish stocks, ocean acidification and sea-level rise. We are failing, but we have not yet failed. There is still time in the next ten years to turn things around. It's our last chance. And our survival as a species depends on the health of the oceans. I'm optimistic that we can look towards **science to provide some of those solutions** that we need to tackle and be innovative. We realize that business as usual is not going to be good enough so the UN Decade of Ocean Science for Sustainable Development really needs to be transformative."

SPC Manager Ocean Affairs, Jens Kruger

The marine realm is the largest component of the Earth's system that stabilises climate and supports life on Earth. However, the First World Ocean Assessment released in 2016 found much of the ocean is now seriously degraded, with changes and losses in the structure, function and benefits from marine systems.

In addition to the resources they provide, the oceans also pose threats to Pacific islanders, from sea level rise, coastal inundation from waves and cyclones, king tides, algal blooms, coral bleaching and fish kill events. Strengthened monitoring and hazard early warning systems are critical to build more resilient coastal and maritime communities.

Adaptation strategies and science-informed policy responses to global change are urgently needed. This is especially critical for the Pacific Islands who, as Large Ocean States, depend on the ocean for food security, transport and blue economic growth.

The United Nations has proclaimed a Decade of Ocean Science for Sustainable Development (2021-2030) to support efforts to reverse the cycle of decline in ocean health and gather ocean stakeholders worldwide behind a common framework that will ensure ocean science can fully support countries in creating improved conditions for sustainable development of the Ocean.

Implication to Pacific Islands

Pacific Island countries and territories are custodians of 20% of global Exclusive Economic Zones (EEZs). Despite the growing political support and enabling environment in the Pacific, the ocean science capacity of Pacific governments is limited and oceanographic expertise is found only at the regional level. Improved ocean science capacity is required, not only for informed and sustainable resource management, but also for robust early warning systems, sea-level rise monitoring, adaptation planning, and climate-smart development. There is also a need to ensure the Pacific region is fully integrated to processes in preparation to the Ocean Decade through effective regional coordination.

To operationalise this coordination SPC established the Pacific Community Centre for Ocean Science (PCCOS) in 2017 as the regional hub for technical and scientific expertise in fisheries management, maritime boundaries, ocean observation, modelling & forecasting, hydrography, disaster resilience, and maritime compliance training, SPC is uniquely placed to support Pacific Island Countries in improving Ocean Governance and Ocean Science Capacity.

Further considerations include but are not limited to the following:

- Need for downscaled, localised data, as global models do not have sufficient resolution to provide actionable information on Pacific Island coasts
- Sparse ocean data in the region due to high cost of deploying and maintaining these systems
- Limited impact-level data needed for impact-based forecasting
- Challenges of working across multiple ocean-related sectors- Fisheries, Maritime, Meteorology, Navy/Police, Disaster Management, Environment etc.
- Need for capacity building opportunities, including oceanographic training within the region

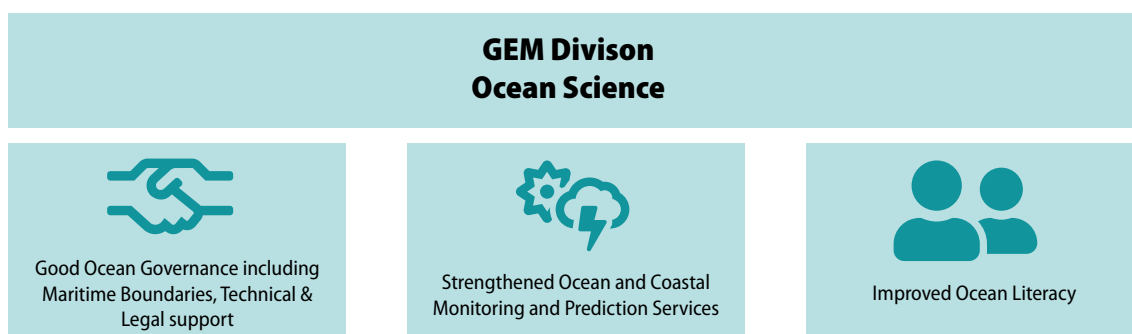
GEM Scientific and Technical Application to Ocean Science

The Oceans and Maritime Programme (previously Ocean and Islands Programme) in the GEM Division has been at the cutting edge of efforts to improve ocean monitoring for improved ocean literacy for Pacific people, governments and our Blue Pacific for many years. This includes work to develop impact-based forecasting capabilities in Pacific countries.

This work is underpinned by a strong oceanographic and ocean affairs team that informs and develops real-time, localised and relevant information to better inform decision making in regards to storm surge and wave inundation risk, oceanographic mapping, maritime boundary delimitation and understanding future impacts of climate change on our coastlines.

The Division is a key regional player in the collection of climate and weather driven impact data. Over the last 15 years, member countries have relied on SPC's technical team to support Post Disaster Need Assessment efforts and collect sound impact information after major disasters.

GEM also serves as host to the region's oceanographic capacity building and technical training hub, home to the Pacific Ocean Portal and a number of other marine meteorology training tools. The Division supported priority needs alongside our members in training areas across introductory ocean science, ocean monitoring, and application of ocean data and forecasts for improved decision-making including stakeholder engagement workshops to facilitate feedback from potential users. This is bolstered by our technical capacity in deployment of coastal monitoring equipment including wave buoys, current meters and environmental and oceanographic sensors to support real-time data and longitudinal data such as sea-level rise across the Blue Pacific.



New technology enables early-warning systems and forecasting of swell-driven inundation in Fiji



Low-lying communities are now informed about flood events in advance to protect lives and livelihoods



Impact-Based forecasts now possible for communities informed by wave buoys and oceanographic models relevant to local areas



Both Fiji Meteorological Service and communities are now able to engage with more relevant, timely and localised information

The Coral Coast, located on the eastern side of Fiji's most highly populated island, Viti Levu, is characterised by many kilometres of low-lying coastal communities. The area is highly vulnerable to inundation, usually without warning, caused by ocean swells and which causes damage to homes and hotels, disrupts services and floods one of Fiji's main arterial roads, the Queen's Highway.

To understand the localised impact of these swell inundation events on coastal communities and the coastline access to high resolution inundation forecasts tailored to account for the coastal processes in the area were needed. Previously the Fiji Meteorological Service (FMS) relied on low-resolution global wave forecast models which did provide information on potential inundations but was not localised enough to provide detailed information for these coastal communities.

As a result of this localised need, SPC, in partnership with FMS, developed a high-resolution inundation forecast system for the Coral Coast. The model allows FMS to better understand and predict the risk of large swells that could cause coastal flooding and risk to communities. This understanding means warnings can be tailored and targeted to at risk communities' up-to 7 days in advance of large swells.

This model was tested in 2018 where two severe swell events were predicted in May and November. The model showed large waves expected to cross the coastline into low-lying communities which allowed Fiji Meteorological Service to issue a timely, relevant and impact-based weather bulletins to inform the public of the flood events and imminent danger.

The FMS team can now develop clear warnings for at-risk areas ahead of time, reducing the risk of economic loss and increasing community preparedness.

To complement the forecast system, SPC, in partnership with FMS, the French National Research Institute for Development (IRD), and the University of the South Pacific (USP) also deployed a wave buoy and temperature-monitoring mooring in the area. This scientific equipment provides ocean researchers, forecasters, mariners, surfers and the public with real-time information about wave conditions and ocean temperatures.

As a result, communities, businesses, tourists and decision-makers have access to localised and specific information. This information is critical to coastal early-warning systems and to understanding the impact of ocean warming on coral reefs. The wave buoy is the first deployed in a non-US affiliated PICT in the South Pacific since the early 1990s.

In addition to Fiji, a whole-of-country early warning system using this model is currently being implemented across Tuvalu.

SUSTAINABLE ENERGY SECURITY



Access to (relatively) cheap energy has become essential to the functioning of modern economies and the sustainable development of the Pacific. However, the uneven distribution of energy supplies among countries has led to significant vulnerabilities with as many as 64% of Pacific people still not accessing regular electricity supply.

Renewable resources and significant opportunities for energy efficiency exist over wide geographical areas, in contrast to other energy sources, which are concentrated in a limited number of countries. Rapid deployment of renewable energy and energy efficiency, and technological diversification of energy sources, would result in significant energy security and economic benefits for the Pacific. This should also support a reduction in fossil fuel reliance in the Pacific as the global shift away from this form of energy supply begins to diminish.

Implication for Pacific Islands

Security of energy supply is a critical concern for Pacific Island Countries and Territories (PICTs) who despite their remoteness as ocean islands and limited transport connectivity, have a significant reliance on energy generated through fossil fuels. As such it is critical for PICTs to pursue an energy policy where the nation can deliver energy economically, reliably, in an environmentally sound way, and safely in quantities sufficient to support the economy and its citizen's daily needs.

Energy security depends on the availability, accessibility, affordability, stability, and uses of energy. These factors are in turn influenced by multiple sectors, groups and environments. To ensure energy security, all PICT sectors and regional and international stakeholders need to work together.

The top challenges for the Pacific at present are:

1. Reliance on fossil fuels shipped to the Pacific. The cost of fuels, high shipping costs and poor shipping connectivity issues create a high risk for countries in ensuring stable energy supply.
2. Growing economies and populations in the Pacific has increased demand for energy
3. The geography of islands in the Pacific along with significant rural and remote populations
4. Investments in renewable energy alternatives can be costly to implement and maintain.

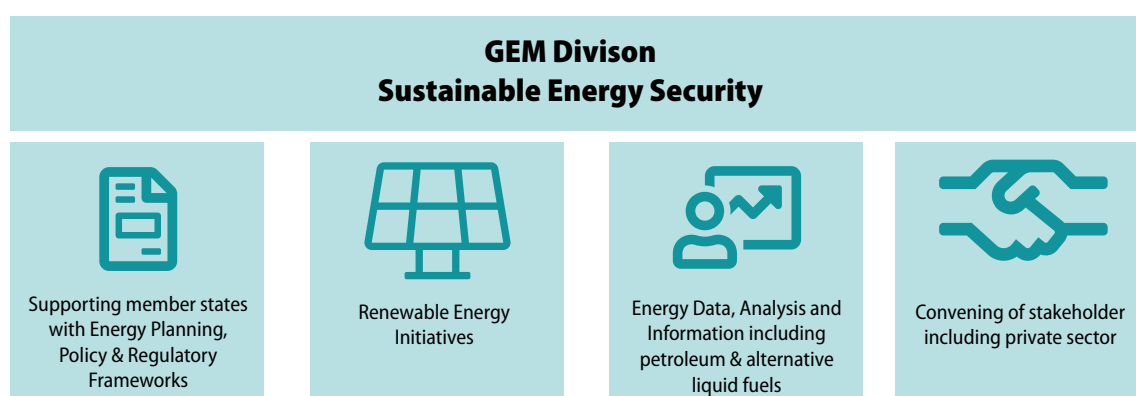


GEM Scientific and Technical Application to Sustainable Energy Security

The Framework for Action on Energy Security in the Pacific outlines a new approach to improving energy security in the region. It acknowledges National energy policies and plans must be the principal means for achieving energy security and promotes a 'whole of sector' approach, based on the concept of 'many partners – one team'. This approach recognises that numerous stakeholders contribute to energy security in the region and accepts them as equal partners⁶.

SPC is mandated as the lead agency for coordinating the implementation of the FAESP. SPC through GEM focuses on improving regional coordination mechanism as well as supporting countries with their energy policy and plan development and sustainability whilst providing detailed energy data.

SPCs work in Energy Security includes:



⁶SPC, 2010. Framework for Action on Energy Security in the Pacific.

Low-carbon development reduces greenhouse gas emissions from ports in Fiji and Solomon Islands



8% reduced
energy cost
equal to
185,750kWh



160 tonnes
greenhouse
gas emissions



Savings of
SBD 904,000 | AUD 161,490 | €99,500
| USD 109,500 | NZ 171

The Maritime Technology Cooperation Centre in the Pacific (MTCC-Pacific) is hosted by SPC in collaboration with the Secretariat of the Pacific Regional Environment Programme (SPREP). It is part of a global network, linking centres in Africa, Asia, the Caribbean and Latin America that have developed and promoted low-carbon maritime transport systems.

MTCC-Pacific, together with internal SPC's Innovation Fund, supported the Green Pacific Port initiative to implement quality, energy, and environmental management for port operations in Fiji, Kiribati, Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu through integrated approaches.

The ports of Suva and Honiara demonstrated strong leadership and with SPC's technical assistance successfully implemented strategies to improve the efficiency and resilience of their operations and infrastructure and reduce the ports' environmental and carbon footprint.

In a shift to solar for Honiara Port there was an 8% reduction in energy cost, 185,750kWh reduction of energy and reduction of 160 tonnes of greenhouse gas emissions. Savings due to these reductions account for SBD 904,000 | AUD 161,490 | €99,500 | USD 109,500 | NZ 171, 044

SUSTAINABLE GEORESOURCES



The Sustainable Georesources approach is maintaining the natural resource base for economic growth by supporting sustainable exploration and production efficiency (energy and minerals) whilst preserving other valuable resources (potable water and ecosystems).

This approach centres on the need for and sustainable use of development minerals such as sand, gravel, and limestone. These resources are critical for infrastructure but globally they are becoming more difficult to access. Mismanagement of these finite resources along with increased environmental impacts can occur if their use is not effectively planned, an issue becoming increasingly common globally.

Implication for Pacific Islands

Access to natural aggregates is declining and as demands for this infrastructure is increasing in the Pacific, understanding and managing our resources is critical for future sustainability.

The top challenges for the Pacific at present are:

1. Some **Pacific Island countries and territories (PICT's)** are blessed with natural aggregate resources, others are not so fortunate (for example the atoll nations), therefore **identifying resources of sufficient quality and quantity for economic extraction** is a key challenge.
2. It is critical that identified resources are **incorporated into land use planning** close to urban centres, to **reduce transport distances, safeguard resources for future generations, and prevent conflicting land uses**.
3. **Pacific communities depend on the surrounding environment** for various functions, therefore **anticipating, monitoring, and minimising environmental and social impacts associated with extraction** operations is vital.
4. **Poor use of monitoring data to improve efficiency of abstraction and maintain water quality** as well as a **the lack of baseline groundwater assessments** and the **priority need for establishing basic sustainable yields, monitoring of abstraction, and the development of basic governance structures** to support these resources.

GEM Scientific and Technical Application

SPC uses **data collection, modelling tools, and scientific analysis** to help **water and aggregates management plan** for, and assess, **hydrologic and geologic** issues that can cause “undesirable results” associated with **groundwater use and infrastructure construction**.

SPC supports Pacific Island Governments and communities to **effectively manage natural water and aggregate resources** in the region by **mapping and testing prospective resources using geological, hydrological and geophysical investigation techniques**, conducting **economic analysis** of extraction methodologies and value chains, and **assessing options to improve social and environmental outcomes**.

A **better understanding and management on Georesources** help the **PICT's** to have a **better resilience, mitigation and adaptation to climate change** impact on our region.

GEM Divison Sustainable Georesources



Data collection, modelling
and scientific analysis



Understanding of natural
water and aggregate
resources for management



Mapping and testing
resource quality



Sustainable use and science
to inform better decision-
making around use of
georesources

Baseline assessment of development minerals in Fiji



4%

Women in sector

The study estimates that 2325 **Fijians are directly employed** in the regulated part of the sector of Viti Levu and Vanua Levu, where a stark minority are female staff.



Earning capacity potential to increase to **FJD 53** million per year



2325 people employed in sector

The era of increased disaster risk and climate change is one that requires the development of more risk informed infrastructure across the Pacific. Developing this type infrastructure including resilient water and sanitation systems means the region needs access to development minerals such as gravel, rocks and limestone.

The environmentally and socially responsible extraction and use of these finite resources are essential for preserving our unique environment and ensuring the continued prosperity of Pacific people and cultures. As such, understanding where resources are, how they can be safely managed and the potential impact extraction will have on communities or tourism must be understood.

To support this, GEM's Georesources team undertook a detailed baseline study of Fiji's Development Minerals as part of the ACP-EU Development Minerals Programme implemented through UNDP. The study highlighted key findings on social, environmental and economic conditions in Fiji's development minerals sector, including:

The true contribution of the sector to Fiji's GDP is up to 500% higher than previously reported (approximately FJD 300 million), which has important implications for both public and private sector stakeholders, particularly in terms of administering the sector and assisting private sector businesses to build business cases and access finance.

The sector supports a large number of small and medium-sized domestic enterprises, with 2325 people directly employed. Many more are employed in support services (e.g. mechanical) and downstream activities (e.g. construction).

The study team lobbied the Fijian Parliamentary Committee for more equal opportunities in the mining sector, highlighting the importance of opening up pathways for women, including by amending legislation on gender discrimination where necessary. As a result, the Fijian government has recently altered the Mining Act to provide equal opportunities for women in the sector.

In addition, the report provided further understanding of the environmental impact river gravel extraction was having on certain areas across the country. As a result, the Fiji Government has banned river gravel extraction as a form of development mineral and is moving towards securing hard rock areas to ensure reduced environmental impact occurs through the use of these resources.

Donors: European Union; ACP; UNDP



EARTH AND MARINE OBSERVATION



Earth observation is the gathering of information about the planet Earth's physical, chemical and biological systems. It involves monitoring and assessing the status of and changes in the natural and man-made environment.

In recent years, Earth Observation has become more sophisticated with the development of remote-sensing satellites and increasingly high-tech instruments. Today's earth observation instruments include floating buoys for monitoring ocean currents, temperature and salinity; land stations that record air quality and rainwater trends; sonar and radar for estimating fish and bird populations; seismic and Global Positioning System (GPS) stations; and over 60 high-tech environmental satellites that scan the Earth from space.

Earth Observation is more important than ever due to the dramatic impact that modern human civilization is having on the global environment⁷.

Implication for Pacific Islands

Our Blue Pacific faces significant vulnerability and risk to the impacts of climate change and disasters including access to clean drinking water and rising sea levels amongst others. Economically, these remote islands have comparatively small land natural resources and high ocean resources and are typically referred to as Large Ocean States.

Earth observation plays a critical role in the gathering of information and providing analysis for Pacific decision makers about their physical, chemical, and biological systems via remote-sensing technologies, supplemented by earth-surveying techniques, which include the collection, analysis, and presentation of data. Earth observation is used to monitor and assess the status of and changes in natural and built environments.

GEM has a long history of support to its member countries in the area of Earth Observation. The initial programme established under SOPAC has grown an established network and legacy in the provision of capacity support and supplementation to PICTs particularly in areas such as initial damage assessments after large disasters in remote or inaccessible places across the region.

As the environmental, climate and livelihood needs of our Blue Pacific has grown, GEM has maintained its services whilst working to increase localised country capacity and technical development. It is well recognised that satellite remote sensing in the Pacific is seen as an often overlooked and neglected opportunity which could complement and support existing development efforts, the approach already integrated across all of our technical programmes within the GEM Division.

Implication for Pacific Islands

To ensure effective integration of our work across the broad sectors and science, a new programme was developed bringing together Earth & Marine Observation. Underpinned by geospatial and earth observation data, this programme supports our technical work and informs better understanding and use of relevant data across the Pacific.

Through the use of digital technology and earth observation services our Earth and Marine Observation work helps understand the changes occurring to our planet and Blue Pacific region.

⁷GEM Scientific and Technical Application to Earth & Marine Observation

This includes supporting the three technical programmes under the Division as well as direct support to the region to improve access, capacity and use of integrated digital technology and earth observation tools. Using satellite data to track coastlines and the impact caused by disasters or climate change, understanding sea-level rise or mapping infrastructure before and after a disaster to determine affected areas quickly is core to the work completed by the programme.

This includes GeoInformatics, GIS and Remote Sensing, Geospatial Data Management and informed Knowledge Management to ensure access to relevant information that helps show the changes to our Blue Pacific region.

GEM Division Earth and Marine Observation



Direct technical support to work across GEM Division and other SPC Divisions



GeoInformatics, GIS, Remote Sensing to inform decision-making



Geospatial Data Management and Knowledge Management



Pacific hailed global leader in determining shared maritime boundaries



SINCE 1973 SPC has supported:



35 out of **48** shared boundary treaties signed and delimited



Legal advice to **14** countries



Technical earth and marine observation to locate the basepoints needed to declare the EEZ



Understanding impact of climate change on maritime boundaries

The Pacific is a global leader in determining shared maritime boundaries – resolving 73 percent of cases of shared boundaries between States, some as far back as 1973. The GEM Division with many partners has worked towards this result since the early 1970s.

Under the previously named banner of SOPAC, the GEM Division developed and continues to develop an effective approach to support countries in determining their maritime boundaries and ensuring these were delimited through the global process of the United Nations.

This work is critical for sovereign states to ensure economic, social and sustainable development is best supported for the vast oceanic resources across the Pacific.

We are also working to understand the risk climate change poses to the boundaries already delimited through the UN system. This will inform understanding the impact of climate change will have on the basepoints used to determine these boundaries into the future.

SPC takes both a convening and scientific role in this work. Many partners are involved in driving the results and understanding of our Blue Pacific and SPC is a keen partner in this space.



This includes GeoInformatics, GIS and Remote Sensing, Geospatial Data Management and informed Knowledge Management to ensure access to relevant information that helps show the changes to our Blue Pacific region.

ANNEXES

1. RESULTS FRAMEWORK

The current GEM programme results framework is based on the programme of the division as shown below.

OCEANS AND MARITIME RESULTS FRAMEWORK

Divisional business plan objective	Divisional Key Result Area	Key Performance Information	Baseline	Target	GEM Thematic Areas	Sustainable Development Goals (SDG) contribution	SDG Indicators
OMP: Good Oceans and Maritime Governance	Result 1.1: PICTs laws and policies comply with international maritime instruments	Indicator 1.1.1: Evidence of PICTs laws & policies reviewed and drafted to be consistent with international maritime instruments	Baseline: At Jan 2016, MTPs adopted in Cook Island, Marshall Islands, PNG, Samoa and Solomon Islands. 2 STCW regulations drafted for Kiribati and Tuvalu	Target: By 2020 a regional MTP template is developed, 4 additional PICTs MTP have been drafted and submitted, and 10 laws drafted and submitted for compliance with SAR/STCW/SOLAS	Maritime Affairs and Safety	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 1.1.2: Evidence of PICTs laws and policies adopted and comply with international maritime standards	Baseline: STCW regulations for Kiribati and Tuvalu were adopted in 2015	Target: By 2020 3 PICTs laws adopted, that comply with international maritime instrument	Maritime Affairs and Safety	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
	Result 1.2: PICTs establish their maritime jurisdictional rights and responsibilities	Indicator 1.2.1: Number of PICTs signing maritime boundary treaties and extended continental shelf claims	Baseline: In 2017, there have been 20 successful boundary negotiations and 10 eCS processes are ongoing	Target: By 2020, two additional maritime boundary to be negotiated and settled and continued support for the eCS process	Ocean Science	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 1.2.2: Number of spatial frameworks enabling blue growth	Baseline: In 2017, PICTs MSPs are largely focused on conservation	Target: By 2020 have one marine cadastre system to support geo-regulations	Ocean Science	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 1.2.3: Number of Legal and political options (paper) developed to address implications of climate change on maritime zones (add 1 more indicator to reflect target)	Baseline: TBD. Could possibly :no data available at the start of project or use AW report	Target: By 2022 14 PICTs are assessed, VBP for at least 3 countries identified with options provided to each	Ocean Science	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources

OMP: Sustainable Maritime Transport and Safe Navigation	Result 2.1: PICTs domestic vessels ship owners adopt and implement safety standards and Safety Management Systems (SMS)	Indicator 2.1.1: Number of domestic vessels adopting SMS	Baseline: In 2015, PIDSS programme instigated in 6 countries (Kiribati, Tonga, Marshall Is, Vanuatu, Solomon Islands and Tuvalu) with a total of 22 domestic vessels adopting SMS	Target: By 2020, to expand PIDSS programme to an additional 7 countries (FSM, Samoa, Cook Is, Tokelau, Palau, Fiji, and PNG) and increase the adoption of SMS to at least 60 vessels.	Maritime Affairs and Safety	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
	Result 2.2: PICTs have the capacity and systems to deliver safety of navigation services in line with international maritime instruments	Indicator 2.2.1: Evidence of improved delivery of safety of navigation services in PICTs	Baseline: In 2015, only Fiji had a system in place to deliver AtoN services and only Fiji, Solomon Islands and PNG have provisions for hydrographic services	Target: by 2020, 13 PICTs are assessed on the delivery of safety of navigation systems and 4 PICTs have reported improved capacity and systems for safe navigation (MSI, hydrography or AtoN)	Maritime Affairs and Safety	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
	Result 2.3: PICTs improve energy efficiency and lower GHG emissions in maritime transport	Indicator 2.3.1: Number of PICTs having reduced energy consumption and GHG emissions from shipping or port operations	Baseline: No data exists	Target: In 2020, at least 4 PICTs have reduced GHG emissions from shipping or port operations and have reduced costs for energy	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
	Result 3.1: PICTs have improved ocean services and marine meteorology capacity	Indicator 3.1.1: Evidence of Pacific National Meteorology and Hydrological Services (NMHSs) routinely providing ocean services and maritime safety information	Baseline: In 2017, only Kiribati is producing a monthly ocean outlook. FMS provides a regional marine forecast	Target: By 2020, there is strong evidence of increased NMHSs capacity and application of improved ocean services and maritime safety information.	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
OMP: Strengthened Ocean and Coastal Monitoring and Prediction Services		Indicator 3.1.2: Evidence of improved PICTs capacity for early warning systems including coastal inundation impact forecasting	Baseline: In 2017, only RMI has wave run-up forecasting	Target: By 2020, there is strong evidence of improved early warning in PICTs.	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources

OMP: Improved Ocean Literacy and Maritime Capacity	Result 3.2: PICTs use ocean and coastal data and assessments to support science-based decision-making	Indicator 3.2.1: Evidence of policies and actions based upon marine and coastal assessment including hazard and risk.	Baseline: In 2017, Tonga and Vanuatu have comprehensive tsunami and multi-hazard plans	Target: By 2020, There is tangible evidence that PICTs incorporate marine and coastal assessment data into decision making process.	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 3.2.2: Increased quantity and quality of accessible ocean data from observations and models in PICTs	Baseline: In 2017, only sparse localized ocean data is available in PICTs (14 tide gauges and 12 ocean parameters are available through the Pacific Ocean Portal (POP))	Target: By 2020, increased availability of localized ocean baseline information to PICTs	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
	Result 4.1: Expertise, skills and knowledge is improved for people in the maritime and ocean-related sectors	Indicator 4.1.1: Number of seafarers and non-seagoing professionals reporting improved knowledge and skills	Baseline: In 2017, 322 total seafarers and non-seafarers trained.	Target: By 2020, train 600 seafarers and non-seagoing professional with at least 50% of them reporting improved knowledge and skills.	Maritime Affairs and Safety	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 4.1.2: Number of National Meteorological Officers and ocean-related sectors reporting improved knowledge and skills (disaggregate by sectors)	Baseline: Nil	Target: By the end of 2020, 50 professionals trained with at least 40% of them reporting improved knowledge or skills	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 4.1.3: Number and percentage of satisfied stakeholder respondents to annual ocean products and services survey.	Baseline: In 2015, stakeholder survey of 30 respondents indicated 75% satisfied users	Target: By 2020, stakeholder survey indicate more than 80% satisfied users	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 4.2.1: Percentage of women and youth trained reporting increased knowledge and capacity	Baseline: In 2017, 30% of women and youth trained reported increased knowledge and capacity	Target: By 2020, at least 50% of people trained by SPC Oceans and Maritime Programme are women and/or youth and 50% report increased knowledge and capacity	Maritime Affairs and Safety	5 Gender equality	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment
	Result 4.2: Women and youth have increased awareness and participation in the maritime and ocean-related sectors	Indicator 4.2.2: Number of states Women in Maritime Associations established and functioning in the Pacific.	Baseline: In 2016, there was 1 functioning WIMA (PNG) and PacWIMA reactivated	Target: By 2020, StateWIMAs will be established and operating in all 14 countries.	Maritime Affairs and Safety	5 Gender equality	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment

GEORESOURCES AND ENERGY PROGRAMME RESULTS FRAMEWORK

Divisional business plan objective	Divisional Key Result Area	Key Performance Information	Baseline	Target	GEM Thematic Areas	Sustainable Development Goals (SDG) contribution	SDG Indicators
GEP: Good Governance for PICT Georesources and Energy	Result 1.1: PICTs adopt and use relevant international and regional frameworks for georesources and energy	Indicator 1.1.1: Evidence of PICTs policies and legislation drafted/reviewed and finalised, and consistent with international and regional legal instruments	The Framework for Action on Energy Security in the Pacific (FAESP) 2010-2020 is the recognised regional framework for energy security in the Pacific. The draft Regional Deep Sea Minerals (DSM) Agreement has been disseminated to all PICTs and Council of Regional Organisations in the Pacific (CROP) for comments.	Target: By 2020, a revised version of FAESP is prepared, reviewed and finalised. - 4 additional PICTs energy policy drafted and submitted, and 4 energy laws drafted (in compliance with FAESP and (Framework for Resilient Development in the Pacific (FRDP) and submitted. - Regional DSM Agreement endorsed by the Forum Leaders and open for ratification.	Sustainable Energy Security	7 Affordable and clean energy	7.1.2 Proportion of population with primary reliance on clean fuels and technology
		Indicator 1.1.2: Evidence of Pacific Island Countries and Territories (PICTs) laws and policies adopted and comply with relevant international standards	As of December 2017, 5 PICTs (Fiji, Samoa, Solomon Islands, Tuvalu, Vanuatu) have adopted laws on minimum energy performance standards and labelling (MEPSL)	Target: By 2020, 3 additional PICT laws on MEPSL are adopted	Sustainable Energy Security	7 Affordable and clean energy	7.1.2 Proportion of population with primary reliance on clean fuels and technology
		Indicator 1.2.1: Number of PICTs that endorsed policies and enacted laws relating to the governance and administration of terrestrial and marine minerals	Between 2013-2017, 3 national policies and 5 national laws, 3 regulations relating to DSM management endorsed and/or enacted; Fiji Quarries Act prohibits women from working in quarries	By 2020, 2 additional mineral policies and 2 mineral laws drafted / amended (in compliance with UNCLOS / international standards) and submitted.	Sustainable Georesources	7 Affordable and clean energy	7.1.2 Proportion of population with primary reliance on clean fuels and technology
		Indicator 1.2.2: Number of PICTs that endorsed policies/road maps and enacted laws relating to the management of renewable energies	Between 2015-2017, 3 Energy Road Maps/policies endorsed or submitted including the governance and administration of the energy sector including other renewable energy sources such as Ocean Thermal Energy Conversion (OTEC) and Geothermal Energy	By 2020, 2 Energy policies/road maps endorsed including the governance and administration of new renewable energy source such as OTEC and Geothermal Energy	Sustainable Energy Security	7 Affordable and clean energy	7.1.2 Proportion of population with primary reliance on clean fuels and technology

GEP: Quality Technical Assessments in Georesources and Energy	Result 2.1: Infrastructure planning and development in PICTs is supported by advance technical surveys	Indicator 2.1.1 Evidence of policies and actions based upon Geo-resources and energy technical assessments and data	The services provided by GEP was promoted via existing networks in the past but not actively promoted to potential clients	By end of 2019, private sector, partners, and member countries fully aware of the services provided by GEP and SPC identified as a go to entity to provide these services	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure
		Indicator 2.1.2: Number of advance surveys for infrastructure development negotiated, planned and implemented	In 2017, one infrastructure related project carried out and another one negotiated. GEP had been involved in many advance surveys in the last decade	By 2020, at least 5 geological / geo-engineering surveys conducted in support of infrastructure development in PICTs	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure
	Result 2.2: PICTs supported with technical assistance for improved minerals management and energy efficiency and strengthened sustainable and renewable energy industry	Indicator 2.2.1: Evidence of change in Knowledge, behaviour and change in Practice observed and witnessed in a number of PICTs in the management of their aggregate resources as a result of technical assistance and supplementation from GEP	In 2017, reasonable behavioural change was witnessed in Kiribati as a direct impact of the SPC-EU-Kiribati Environmentally Safe Aggregates for Tarawa (ESAT) project	By 2020, reasonable-significant behavioural changes observed in 3 countries on how they manage their aggregate resources	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure
		Indicator 2.2.2: Geo-resources (i.e. aggregates and geothermal resources) in a number of PICTs assessed and quantified.	In 2017, a major baseline study on aggregate resources (including legal, social and cultural, economic and environmental aspects) in Fiji carried out	By 2020, at least 3 Geo-resource prospects (i.e. aggregates and geothermal) assessed, and/or partners attracted to invest in additional exploration works or resource development	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure

	Indicator 2.2.3: Number of technical assessments on energy efficiency provided to PICTs	In 2017 a baseline survey on consumer awareness and use of energy rating labels in PICTs was conducted	Follow up surveys to be conducted in 4 PICTs by 2020. Funding is secured to be able to carry out these surveys	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure
		In 2012-2013, wind assessments were conducted in Palau, FSM and Tonga. In 2015, a survey for OTEC (Oceans Thermal Energy Conversion) plant site was conducted in Tarawa, Kiribati	Three technical assessments by 2020. Provide technical servicing assistance to existing renewable monitoring sites	Sustainable Georesources	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		There is no fully functional, staffed and resourced regional energy entity focusing on the private sector; No targeted training and research programme for the private sector; No targeted and centralised on-line data and info for the private sector; Lack of new local sustainable energy businesses registered in PICTs; Lack on new Power Purchase Agreements signed in the PICTs; Lack of targeted national and regional funds to support private sector investments in Renewable Energy (RE) & Energy Efficiency (EE); Absence of a regular forum for private sector and investors interactions with governments, power utilities and transport authorities	- At least USD 1 million is secured for PCREEE's Second Operational Phase [2021 – 2025]; - A regional training and research programme for the private sector is adopted by the 4th Steering Committee Meeting in 2019; - Specific energy data and info for the private sector are available online at the PRDR and PCREEE's by 2020; - At least 3 new local Sustainable Energy (SE) business are registered by 2020 through PCREEE technical assistance; - 3 PPAs totalling at least 3 Megawatts (MW) are signed and construction underway by 2020; - A cumulative capital of at least USD 10 million are available at local financing institutions by 2020 for SE investments; - Sustainable energy investment forums are held annually	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
	Indicator 2.2.4: Number of technical assessments and assistance on renewable resources provided to PICTs	No targeted training and research programme for the private sector	A regional training and research programme for the private sector is adopted by the 4th Steering Committee Meeting in 2019	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
		No targeted and centralised on-line data and info for the private sector; Lack of new local sustainable energy businesses registered in PICTs	Specific energy data and info for the private sector are available online at the PRDR and PCREEE's by 2020	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems

	Lack of new local sustainable energy businesses registered in PICs	At least 3 new local Sustainable Energy (SE) businesses are registered by 2020 through PCREEE technical assistance	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
		Lack of new local sustainable energy businesses registered in PICs	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
		Lack of new local sustainable energy businesses registered in PICs	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
	Lack on new Power Purchase Agreements (PPAs) signed in the PICs	3 PPAs totalling at least 3 Megawatts (MW) are signed and construction underway by 2020	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
		A cumulative capital of at least USD 10 million are available at local financing institutions by 2020 for SE investments	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
		Sustainable energy investment forums are held annually	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems

GEP: Capacity Development in Geo-resources Management and Energy Security	Result 3.1: Skills, knowledge and practice is improved for PICT personnel responsible for geo-resources and energy	Indicator 3.1.1: Number of PICTs participants trained on various aspects of minerals and energy	In the last 3 years (2015-2017), 35 PICT nationals trained on different aspects (i.e. Occupational Health and Safety (OHS), geology, environment, resource assessment) of aggregates management. General lack of local and regional capacity and expertise in Renewable Energy and CC Adaptation in PICs due to an absence of sustainable training programmes. Similarly, there is lack of well-resourced and equipped regional training institutions to deliver on the required training programmes.	By 2020, 30 PICTs nationals trained and knowledge enhanced on certain aspects of geo-resources and energy.	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
				By 2020, Regional Competency standards developed as a global first for programmes in Resilience and Sustainable Energy (SE) at levels 1-4 on the Pacific Qualification Framework (PQF)/ Fiji Qualification Framework (FQF). Regional / National Certificates are regionally / nationally accredited and registered. Regional / National Competency standards are implemented in TVET institutions which are supported to deliver the trainings; A pool of national trainers/ assessors created in the countries.	Sustainable Georesources	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		Indicator 3.1.2: Number of PICTs participants trained who report application of knowledge and skills from the trainings on various aspects of minerals and energy	In the last 3 years about 60 PICTs nationals have reported that they have applied their new knowledge and skills in their respective work places	By 2020, 40 PICTs nationals report that they have applied their new knowledge and skills in various aspect of geo-resources and energy in their respective work places	Sustainable Georesources	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		Indicator 3.1.3 Number of countries supported for pricing advice	As of 2016, 7 countries were being advised on fuel price setting and verification. This has since stopped	Propose to reinstate advice to at least 5 countries	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
	Result 3.2: Women and youth have increased awareness and participation in the geo-resources and energy sectors	Indicator 3.1.3: Professional skills of selected PICT nationals enhanced through attachments and on-the-job trainings	Between 2015- 2017, professional skills of 12 nationals of Kiribati and Fiji enhanced through attachments and on the job trainings. No CC Adaptation and SE training networks in the Pacific; lack of regional / national strategies in RPL/RCC; no competency standards developed in SE and Resilience qualifications	By 2020, professional skills of at least 10 PICT nationals enhanced through training and hands-on skills transfer initiatives. Establishment of the PRFRP under the PacTVET project; Training of Trainers conducted in identified PICs to enhance professional skills and capacity of individuals; Establishment of a scholarship fund in a selected P-ACP country; Development of competency based standards for the regional/national qualifications in SE and Resilience	Sustainable Energy Security	13 Climate action	13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula

	Indicator 3.2.1: Awareness activities increased for PICT women and youths through GEP trainings, consultation and awareness initiatives	High percentage of women and youth in PICTs are either not aware or vaguely aware of the opportunities in geo-resources and energy. Absence of a Gender Equality strategy in Technical and Vocational Education and Training (TVET) institutions	By 2020, dedicated activities, particularly in SE and CC Resilience, to promote women and youth participation in implementation, planning and decision making in the Geo-resources and energy sectors. About 40 nationals of PICTs youth and women will be trained by 2020. A PacTVET Gender Equality Strategy is developed to promote the equal participation of men and women in the PacTVET training programmes.	Sustainable Energy Security	5 Gender equality	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment
		Generally low involvement of women and youth in PICTs in geo-resources and energy activities.	By 2020, 20 women and 20 youths have taken steps to gain formal qualifications and/ or employment in geo-resources and energy.	Sustainable Energy Security	5 Gender equality	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment
	Indicator 3.2.2: Increased participation of PICT women and youth in geo-resources and energy activities	Pacific Regional Data Repository (PRDR) is working well and regularly updated but needs some adjustments. Geo-resources has no dedicated database	By 2020, PRDR is updated and linked to PacGeo to allow maximum exposure to a much larger audience. Both geo-resources and energy data are uploaded in PacGeo	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		Data and database management and maintenance are a significant ongoing challenge to many PICTs	By 2020, relevant assistance provided to PICTs to improve their capacity to collect, analyse and promote data, including the use of alternative repository system such as PRDR; 3 PIC Energy Statistics Year Books published	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
Result 3.3: PICTs capacity, systems and tools for data collection and analysis, dissemination in geo-resources and energy is improved and supported by functional secure regional and national data repositories	Indicator 3.3.1: GEP data collection and management in geo-resources and energy improved and enhanced through a functional and utilised data depositories	Evidence of improved capacity of PICTs on data collection, analysis, and promotion	By 2020, a robust and open data management system is in place that allows varieties of audience to access relevant metadata and data that inform investment decisions	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		Evidence of use of metadata and data analytics to promote PICTs energy potential				

GEP: Enhanced private sector participation in Renewable Energy and Energy Efficiency	Result 4.1 Enhanced productivity and competitiveness of island industries with high value and job creation potential through sustainable energy solutions and technologies supports					Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
	Result 4.2 Increased combined energy approaches of sustainable energy interventions and other aspects of circular economy					Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
	Result 4.3 Enhanced sustainable energy entrepreneurship, industrial development and innovation					Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
GEP: Strengthening information sharing and national capacity in climate change actions	Result 5.1 : PICTS and regional organisations share knowledge, information and results about climate action for better adaptation and mitigation of climate change impacts					Integrated Disaster and Climate Resilience	13 Climate action	13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula

DISASTER AND COMMUNITY RESILIENCE PROGRAMME RESULTS FRAMEWORK

Divisional business plan objective	Divisional Key Result Area	Key Performance Information (Qualitative and Quantitative)	Baseline (from divisional results framework in business plan)	Target (from divisional results framework in business plan)	GEM Thematic Areas	Sustainable Development Goals (SDG) contribution	SDG Indicators
DCRP: Good Governance and Partnerships for resilience	Result 1.1 PICTS strengthen their legal, policy and planning instruments in order to support climate change, disaster risk management, water and sanitation security and Integrated Coastal Management for Resilience	Indicator 1.1.1 Strengthened legal, policy and planning instruments that address climate change, disaster risk management, water and sanitation security and Integrated Coastal Management for Resilience		By 2020, ? PICs have legal, policy and planning instruments			
		Number of national legal, policy and planning instruments proposed/ reviewed	As at 2018, 4 national legal, policy and planning instruments proposed/ reviewed		Integrated Disaster and Climate Resilience / Water and Sanitation	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Number of national legal, policy and planning instruments adopted	As at 2018, 4 of national legal, policy and planning instruments adopted		Integrated Disaster and Climate Resilience / Water and Sanitation	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Number of national legal, policy and planning instruments implemented	As at 2018, 4 of national legal, policy and planning instruments implemented		Integrated Disaster and Climate Resilience / Water and Sanitation	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Number of sub-national legal, policy and planning instruments proposed/ reviewed			Integrated Disaster and Climate Resilience / Water and Sanitation	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Number of sub-national legal, policy and planning instruments adopted			Integrated Disaster and Climate Resilience / Water and Sanitation	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Number of sub-national legal, policy and planning instruments implemented			Integrated Disaster and Climate Resilience / Water and Sanitation	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
	Result 1.2 Effective partnerships and alliances formed and supported to enable coordinated, collaborative and sustained actions for resilience in Climate Change and Disaster Resilience, Water and Sanitation Security and/ or integrated Integrated Coastal Management	Indicator 1.2.1: Number of actions strengthening coordination and collaboration of partnerships and alliances in Climate Change, Disasters and Risks, Water and Sanitation Security and Integrated Coastal Management for Resilience	As at 2018 all X PICs have Climate Change, Disasters and Risks, Water and Sanitation Security and Integrated Coastal Management partnerships and alliances in place and supported.	As at 2020 all X PICs have reviewed/ revised/ incorporated Climate Change, Disasters and Risks, Water and Sanitation Security and Integrated Coastal Management partnerships or alliance actions .			

Indicator 2.1.2: Improved access to scientific information	As at 2018 Pacific Risk Information System, Pacific Disaster Net, PDaLo is accessible to all 14 countries.	By 2023, Pacific Risk Information System, PDN, PDaLo is updated and 6 countries access and use to inform decisions.	Integrated Disaster and Climate Resilience	13 Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
			Integrated Disaster and Climate Resilience	13 Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
	Number of State of Coasts platform developed	As at 2018, 2State of Coasts platform developed	Integrated Disaster and Climate Resilience	13 Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
	Number of National CC Portals developed	AS at 2018, 2 National CC Portals developed	Integrated Disaster and Climate Resilience	13 Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)

DCRP: Strengthened understanding of managing risks associated with climate change, natural hazards, water resources and coastal zone management	Result 2.1: PICTS have access to the scientific knowledge needed to manage the risks associated with climate change, natural hazards, water resources and coastal zone management	Number of actions contributing to the proposed/review of partnerships and alliances	Baseline - ISACC/Water and Sanitation (Water Security and WRAM)/R2R/GCCA SUPA/FRDP	As at 2023, X PICs to have INSERT ACTION XXXX	Integrated Disaster and Climate Resilience	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Number of actions contributing to the adoption of partnerships and alliances	Baseline - ISACC/Water and Sanitation (Water Security and WRAM)/R2R/GCCA SUPA/FRDP	CC - 3 (SUPA) + 7 (ISACC) actions contributing to the adoption of partnerships & alliances	Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developed States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
		Number of actions contributing to the implementation of partnerships and alliances	Baseline - ISACC/Water and Sanitation (Water Security and WRAM)/R2R/GCCA SUPA/FRDP/RENI	CC - 7 (SUPA & RENI) + 7 actions contributing to the implementation of partnerships & alliances	Integrated Disaster and Climate Resilience	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Indicator 2.1.1: Increased quantity and quality of scientific information					
		Number of surface water and groundwater assessments completed	As of 20??, 2 surface water and groundwater assessments completed	By 20??, 4 surface hydrological assessments completed & accessible in selected PICS	Water and Sanitation	6 Clean water and sanitation	6.1.1 Proportion of population using safely managed drinking water services
		Number of rapid coastal assessments completed	As of 20??, 3 rapid coastal assessments completed	By 20??, 14 rapid coastal assessments completed	Integrated Disaster and Climate Resilience	13 Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
		Number of technical assessment reports published	As of 20??, 7Technical assessment reports published	By 20??, ? Technical assessment reports published	Integrated Disaster and Climate Resilience	13 Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)

		Number and quality of baseline environmental state and socio-cultural Information incorporated in project area diagnostics	As at 2018, ? quality of baseline environmental state and socio-cultural Information incorporated in project area diagnostics	By 2020, 14 national pilot project area diagnostics based on R2R approach	Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
		Number of drought assessment methodologies developed and implemented			Water and Sanitation	6 Clean water and sanitation	6.1.1 Proportion of population using safely managed drinking water services
		Number of weather forecast information products disseminated			Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
		Frequency of community weather information reporting			Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
		Indicator 2.1.5: Development and support of end-to-end multihazard early warning systems (MHEWS) in PICTs					
		Number of operational impact forecasting platform	As at 2018, no PIC has an operational impact forecasting platform	By 2020, at least 4 PICs have an operational impact forecasting platform	Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities

DCRP: Strengthened Capacity to Manage Risk and Disaster	Result 4.1. Strengthened disaster preparedness and response coordination capacities in PICTS	Indicator 3.2.2 Number and quality of baseline environmental state and socio-cultural information incorporated in project area diagnostics			Sustainable Georesources	9 Industry innovation and infrastructure	9.c.1 Proportion of population covered by a mobile network, by technology
		Indicator 3.2.3: Area of restored habitat (ha)		By 2020 6,838 ha of restored habitat (4 sites)	Integrated Disaster and Climate Resilience	15 Life on land	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
		Indicator 3.2.4: Area of conserved/protected wetland		By 2020, 290 ha of conserved/ protected wetland (2 sites)	Integrated Disaster and Climate Resilience	15 Life on land	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
		Indicator 3.2.5: Area of catchment under improved management (ha)		By 2020 25,860 ha of catchment under improved management (7 sites)	Integrated Disaster and Climate Resilience	15 Life on land	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
		Indicator 4.1.1 Number of countries and territories developing and implementing the Strategic Roadmaps for Emergency (SREMs)	As at 2018, only 1 country has developed, endorsed and implemented SREMs	By 2020, upto 15 countries have developed SREMs and 6 countries have endorsed and implemented SREMs	Integrated Disaster and Climate Resilience	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Indicator 4.1.2 Number of PICTs developing, adopting and strengthening response plans and standard operating procedures for emergencies and disasters					
		Number of PICTs provided technical guidance for drought, flood, tsunami response	As at 2018, 7 PICTs provided technical guidance for drought, flood, tsunami response	By 2020, 7PICTs provided technical guidance for drought, flood, tsunami response	Water and Sanitation	6 Clean water and sanitation	6.1.1 Proportion of population using safely managed drinking water services
		Number of PICTs with SOPs	As at 2018, ? PICTs with SOPs	By 2020, 7PICTs with SOPs	Integrated Disaster and Climate Resilience	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Indicator 4.1.3: Number of PICTs with formal twinning relationships with AFAC members and other stakeholders endorsed and adopted by their Governments	As at 2018, 11 MoUs between Fire Services and AFAC partner	By 2020, 6 countries have national MoUs between NDMO Fire and Police for AFAC twinning	Integrated Disaster and Climate Resilience	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies
		Indicator 4.1.4: Number of countries with established protocols and procedures for national inter-agency cooperation in emergency and disaster preparedness and response	As at 2018, no protocols in place for inter-agency cooperation	By 2020, 6 countries have	Integrated Disaster and Climate Resilience	13 Climate action	13.1.1 Number of countries with national and local disaster risk reduction strategies

DCRP- Demonstrated Effective Investments for Resilience	Result 3.1: PICTS demonstrate evidence based investment in climate and disaster resilient infrastructure	Number of SOPs for early warning	As of 2018, 14 countries have SOPs for early warning	By 2020, By 2020 SOPs for early warning reviewed and tested by 14 countries	Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
		Number of Simulation exercises conducted annually	As of 2018, simulation exercises conducted annually in 5 countries	By 2020, 8 countries' conduct simulation exercises	Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
		Indicator 3.1.1: No. of Infrastructure investments that are resilient to climate and disaster risk.	As at 2018, 21 EOCs constructed	By 2020, 28 EOCs constructed	Integrated Disaster and Climate Resilience	9 Industry innovation and infrastructure	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure
		Number of EOCs constructed			Integrated Disaster and Climate Resilience	13 Climate action	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
	Result 3.2: PICTs identify and invest in ecosystem based approaches to building resilience	Indicator 3.1.2: Number of beneficiaries that access improved resilient infrastructure services	As at 2018, 6000 people had access to safe water services (Christmas Islands data only)	By 2020, 50,000 people have access to resilient infrastructure	Integrated Disaster and Climate Resilience	9 Industry innovation and infrastructure	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure
		Indicator 3.2.1: Number and quality of ICM-IWRM investments incorporating baseline environmental state and socio-cultural information for the prioritization of investment sites	In 2018, ...	By 2020, Up to 14 ICM-IWRM investments utilizing methodology and procedures for characterizing island coastal areas for ICM investment are developed	Water and Sanitation	6 Clean water and sanitation	6.1.1 Proportion of population using safely managed drinking water services
					Integrated Disaster and Climate Resilience	13 Climate action	13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)

			Indicator 2.1.2: Number of advance surveys for infrastructure development negotiated, planned and implemented	In 2017, one infrastructure related project carried out and another one negotiated. GEP had been involved in many advance surveys in the last decade	By 2020, at least 5 geological / geo-engineering surveys conducted in support of infrastructure development in PICTs	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official flows) to infrastructure
	Result 2.2: PICTs supported with technical assistance for improved minerals management and energy efficiency and strengthened sustainable and renewable energy industry		Indicator 2.2.1: Evidence of change in Knowledge, behaviour and change in Practice observed and witnessed in a number of PICTs in the management of their aggregate resources as a result of technical assistance and supplementation from GEP	In 2017, reasonable behavioural change was witnessed in Kiribati as a direct impact of the SPC-EU-Kiribati Environmentally Safe Aggregates for Tarawa (ESAT) project	By 2020, reasonable-significant behavioural changes observed in 3 countries on how they manage their aggregate resources	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official flows) to infrastructure
			Indicator 2.2.2: Geo-resources (i.e. aggregates and geothermal resources) in a number of PICTs assessed and quantified.	In 2017, a major baseline study on aggregate resources (including legal, social and cultural, economic and environmental aspects) in Fiji carried out	By 2020, at least 3 Geo-resource prospects (i.e. aggregates and geothermal) assessed, and/or partners attracted to invest in additional exploration works or resource development	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official flows) to infrastructure
			Indicator 2.2.3: Number of technical assessments on energy efficiency provided to PICTs	In 2017 a baseline survey on consumer awareness and use of energy rating labels in PICTs was conducted	Follow up surveys to be conducted in 4 PICTs by 2020. Funding is secured to be able to carry out these surveys	Sustainable Georesources	9 Industry innovation and infrastructure	9.a.1 Total official international support (official flows) to infrastructure
			Indicator 2.2.4: Number of technical assessments and assistance on renewable resources provided to PICTs	In 2012-2013, wind assessments were conducted in Palau, FSM and Tonga. In 2015, a survey for OTEC (Oceans Thermal Energy Conversion) plant site was conducted in Tarawa, Kiribati	Three technical assessments by 2020. Provide technical servicing assistance to existing renewable monitoring sites	Sustainable Georesources	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption

Indicator 2.2.5: Evidence of increased involvement of the private sector in renewable energy and energy efficiency initiatives through Pacific Centre for Renewable and Energy Efficiency (PCREEE) in PICTs	There is no fully functional, staffed and resourced regional energy entity focusing on the private sector; No targeted training and research programme for the private sector; No targeted and centralised on-line data and info for the private sector; Lack of new local sustainable energy businesses registered in PICs; Lack on new Power Purchase Agreements signed in the PICs; Lack of targeted national and regional funds to support private sector investments in Renewable Energy (RE) & Energy Efficiency (EE); Absence of a regular forum for private sector and investors interactions with governments, power utilities and transport authorities	- At least USD 1 million is secured for PCREEE's Second Operational Phase [2021 – 2025]; - A regional training and research programme for the private sector is adopted by the 4th Steering Committee Meeting in 2019; - Specific energy data and info for the private sector are available online at the PRDR and PCREEE's by 2020; - At least 3 new local Sustainable Energy (SE) business are registered by 2020 through PCREEE technical assistance; - 3 PPAs totalling at least 3 Megawatts (MW) are signed and construction underway by 2020; - A cumulative capital of at least USD 10 million are available at local financing institutions by 2020 for SE investments; - Sustainable energy investment forums are held annually	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
	No targeted training and research programme for the private sector	A regional training and research programme for the private sector is adopted by the 4th Steering Committee Meeting in 2019	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
	No targeted and centralised on-line data and info for the private sector; Lack of new local sustainable energy businesses registered in PICs	Specific energy data and info for the private sector are available online at the PRDR and PCREEE's by 2020	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems

GEP: Capacity Development in Geo-resources Management and Energy Security	Result 3.1: Skills knowledge and practice is improved for PICT personnel responsible for geo-resources and energy	Indicator 3.1.1: Number of PICTs participants trained on various aspects of minerals and energy	Lack of new local sustainable energy businesses registered in PICs	At least 3 new local Sustainable Energy (SE) business are registered by 2020 through PCREEE technical assistance	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
			Lack of new local sustainable energy businesses registered in PICs	At least 3 new local Sustainable Energy (SE) business are registered by 2020 through PCREEE technical assistance	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
			Lack of new local sustainable energy businesses registered in PICs	At least 3 new local Sustainable Energy (SE) business are registered by 2020 through PCREEE technical assistance	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
			Lack on new Power Purchase Agreements (PPAs) signed in the PICs	3 PPAs totalling at least 3 Megawatts (MW) are signed and construction underway by 2020	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
				A cumulative capital of at least USD 10 million are available at local financing institutions by 2020 for SE investments	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
				Sustainable energy investment forums are held annually	Sustainable Energy Security	7 Affordable and clean energy	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
			In the last 3 years (2015-2017), 35 PICT nationals trained on different aspects (i.e. Occupational Health and Safety (OHS), geology, environment, resource assessment) of aggregates management.	By 2020, 30 PICTs nationals trained and knowledge enhanced on certain aspects of geo-resources and energy.	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
			General lack of local and regional capacity and expertise in Renewable Energy and CC Adaptation in PICs due to an absence of sustainable training programmes. Similarly, there is lack of well-resourced and equipped regional training institutions to deliver on the required training programmes.	By 2020, Regional Competency standards developed as a global first for programmes in Resilience and Sustainable Energy (SE) at levels 1-4 on the Pacific Qualification Framework (PQF)/ Fiji (FQF). Regional / National Certificates are regionally / nationally accredited and registered. Regional / National Competency standards are implemented in TVET institutions which are supported to deliver the trainings; A pool of national trainers/assessors created in the countries.	Sustainable Georesources	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption

		Indicator 3.1.2: Number of PICTs participants trained who report application of knowledge and skills from the trainings on various aspects of minerals and energy	In the last 3 years about 60 PICTs nationals have reported that they have applied their new knowledge and skills in their respective work places	By 2020, 40 PICTs nationals report that they have applied their new knowledge and skills in various aspect of geo-resources and energy in their respective work places	Sustainable Georesources	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		Indicator 3.1.3 Number of countries supported for pricing advice	As of 2016, 7 countries were being advised on fuel price setting and verification. This has since stopped	Propose to reinstate advice to at least 5 countries	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
	Result 3.2: Women and youth have increased awareness and participation in the geo-resources and energy sectors	Indicator 3.1.3: Professional skills of selected PICT nationals enhanced through attachments and on-the-job trainings	Between 2015- 2017, professionals of Kiribati and Fiji enhanced through attachments and on the job trainings. No CC Adaptation and SE training networks in the Pacific; lack of regional / national strategies in RPL/RCC; no competency standards developed in SE and Resilience qualifications	By 2020, professional skills of at least 10 PICT nationals enhanced through training and hands-on skills transfer initiatives. Establishment of the PRFRP under the PacTVET project; Training of Trainers conducted in identified PICTs to enhance professional skills and capacity of individuals; Establishment of a scholarship fund in a selected P-ACP country; Development of competency based standards for the regional/ national qualifications in SE and Resilience	Sustainable Energy Security	13 Climate action	13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
		Indicator 3.2.1: Awareness activities increased for PICT women and youths through GEP trainings, consultation and awareness initiatives	High percentage of women and youth in PICTs are either not aware or vaguely aware of the opportunities in geo-resources and energy. Absence of a Gender Equality strategy in Technical and Vocational Education and Training (TVET) institutions	By 2020, dedicated activities, particularly in SE and CC Resilience, to promote women and youth participation in implementation, planning and decision making in the Geo-resources and energy sectors. About 40 nationals of PICTs youth and women will be trained by 2020. A PacTVET Gender Equality Strategy is developed to promote the equal participation of men and women in the PacTVET training programmes.	Sustainable Energy Security	5 Gender equality	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment

		Indicator 3.2.2: Increased participation of PICT women and youth in geo-resources and energy activities	Generally low involvement of women and youth in PICTs in geo-resources and energy activities.	By 2020, 20 women and 20 youths have taken steps to gain formal qualifications and/or employment in geo-resources and energy.	Sustainable Energy Security	5 Gender equality	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment
	Result 3.3: PICTs capacity, systems and tools for data collection and analysis, dissemination in geo-resources and energy is improved and supported by functional secure regional and national data repositories	Indicator 3.3.1: CEP data collection and management in geo-resources and energy improved and enhanced through a functional and utilised data depositories	Pacific Regional Data Repository (PRDR) is working well and regularly updated but needs some adjustments. Geo-resources has no dedicated database	By 2020, PRDR is updated and linked to PacGeo to allow maximum exposure to a much larger audience. Both geo-resources and energy data are uploaded in PacGeo	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		Indicator 3.3.2: Evidence of improved capacity of PICTs on data collection, analysis, and promotion	Data and database management and maintenance are a significant ongoing challenge to many PICTs	By 2020, relevant assistance provided to PICTs to improve their capacity to collect, analyse and promote data, including the use of alternative repository system such as PRDR; 3 PIC Energy Statistics Year Books published	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
		Indicator 3.3.3: Evidence of use of metadata and data analytics to promote PICTs energy potential	Energy data are available on PRDR but can be used more effectively to promote renewable energy potential in PICTs in order to attract investment	By 2020, a robust and open data management system is in place that allows varieties of audience to access relevant metadata and data that inform investment decisions	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
	Result 4.1 Enhanced productivity and competitiveness of island industries with high value and job creation potential through sustainable energy solutions and technologies supports				Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
	Result 4.2 Increased combined energy approaches of sustainable energy interventions and other aspects of circular economy				Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
GEP: Enhanced private sector participation in Renewable Energy and Energy Efficiency		Result 4.3 Enhanced sustainable energy entrepreneurship, industrial development and innovation			Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption

GEP: Strengthening information sharing and national capacity in climate change actions	Result 5.1 : PICTs and regional organisations share knowledge, information and results about climate action for better adaptation and mitigation of climate change impacts				Integrated Disaster and Climate Resilience	13 Climate action	13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
	Result 1.1: PICTs laws and policies comply with international maritime instruments	Indicator 1.1.1: Evidence of PICTs laws & policies reviewed and drafted to be consistent with international maritime instruments	Baseline: At Jan 2016, MTPs adopted in Cook Island, Marshall Islands, PNG, Samoa and Solomon Islands. 2 STCW regulations drafted for Kiribati and Tuvalu	Target: By 2020 a regional MTP template is developed, 4 additional PICTs MTP have been drafted and submitted, and 10 laws drafted and submitted for compliance with SAR/STCW/SOLAS	Maritime Affairs and Safety	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
OMP: Good Oceans and Maritime Governance	Result 1.2: PICTs establish their maritime jurisdictional rights and responsibilities	Indicator 1.1.2: Evidence of PICTs laws and policies adopted and comply with international maritime standards	Baseline: STCW regulations for Kiribati and Tuvalu were adopted in 2015	Target: By 2020 3 PICTs laws adopted, that comply with international maritime instrument	Maritime Affairs and Safety	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 1.2.1: Number of PICTs signing maritime boundary treaties and extended continental shelf claims	Baseline: In 2017, there have been 20 successful boundary negotiations and 10 eCS processes are ongoing	Target: By 2020, two additional maritime boundary to be negotiated and settled and continued support for the eCS process	Ocean Science	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 1.2.2: Number of spatial frameworks enabling blue growth	Baseline: In 2017, PICTs MSPs are largely focused on conservation	Target: By 2020 have one marine cadastre system to support geo-regulations	Ocean Science	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 1.2.3: Number of Legal and political options (paper) developed to address implications of climate change on maritime zones (add 1 more indicator to reflect target)	Baseline: TBD. Could possibly :no data available at the start of project or use AW report	Target: By 2022 14 PICTs are assessed, VBP for at least 3 countries identified with options provided to each	Ocean Science	14. Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources

OMP: Sustainable Maritime Transport and Safe Navigation	Result 2.1: PICTs domestic vessels ship owners adopt and implement safety standards and Safety Management Systems (SMS)	Indicator 2.1.1: Number of domestic vessels adopting SMS	Baseline: In 2015, PIDSS programme instigated in 6 countries (Kiribati, Tonga, Marshall Is, Vanuatu, Solomon Islands and Tuvalu) with a total of 22 domestic vessels adopting SMS	Target: By 2020, to expand PIDSS programme to an additional 7 countries (FSM, Samoa, Cook Is, Tokelau, Palau, Fiji, and PNG) and increase the adoption of SMS to at least 60 vessels.	Maritime Affairs and Safety	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
	Result 2.2: PICTs have the capacity and systems to deliver safety of navigation services in line with international maritime instruments	Indicator 2.2.1: Evidence of improved delivery of safety of navigation services in PICTs	Baseline: In 2015, only Fiji had a system in place to deliver AtoN services and only Fiji, Solomon Islands and PNG have provisions for hydrographic services	Target: by 2020, 13 PICTs are assessed on the delivery of safety of navigation systems and 4 PICTs have reported improved capacity and systems for safe navigation (MSI, hydrography or AtoN)	Maritime Affairs and Safety	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
	Result 2.3: PICTs improve energy efficiency and lower GHG emissions in maritime transport	Indicator 2.3.1: Number of PICTs having reduced energy consumption and GHG emissions from shipping or port operations	Baseline: No data exists	Target: In 2020, at least 4 PICTs have reduced GHG emissions from shipping or port operations and have reduced costs for energy	Sustainable Energy Security	7 Affordable and clean energy	7.2.1 Renewable energy share in the total final energy consumption
OMP: Strengthened Ocean and Coastal Monitoring and Prediction Services	Result 3.1: PICTs have improved ocean services and marine meteorology capacity	Indicator 3.1.1: Evidence of Pacific National Meteorology and Hydrological Services (NMHSs) routinely providing ocean services and maritime safety information	Baseline: In 2017, only Kiribati is producing a monthly ocean outlook. FMS provides a regional marine forecast	Target: By 2020, there is strong evidence of increased NMHSs capacity and application of improved ocean services and maritime safety information.	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
		Indicator 3.1.2: Evidence of improved PICTs capacity for early warning systems including coastal inundation impact forecasting	Baseline: In 2017, only RMI has wave run-up forecasting	Target: By 2020, there is strong evidence of improved early warning in PICTs.	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
	Result 3.2: PICTs use ocean and coastal data and assessments to support science-based decision-making	Indicator 3.2.1: Evidence of policies and actions based upon marine and coastal assessment including hazard and risk.	Baseline: In 2017, Tonga and Vanuatu have comprehensive tsunami and multi-hazard plans	Target: By 2020, There is tangible evidence that PICTs incorporate marine and coastal assessment data into decision making process.	Ocean Science	14 Life below water	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources





