

Securing widespread community livelihoods and
resilience through coastal fisheries co-management
in Papua New Guinea



COUNTRY SITUATION ANALYSIS REPORT AND INDICATORS

Pacific-European Union Marine
Partnership Programme



EUROPEAN UNION



Sweden
Sverige



PEUMP

Pacific-European Union Marine Partnership Programme



Pacific
Community
Communauté
du Pacifique



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LIST OF ACRONYMS

ADB	Asian Development Bank
AIDS	Acquired immune deficiency syndrome
CBO	Community-based organisation
CCDA	Climate Change and Development Authority
CEPA	Conservation and Environment Protection Authority
CFBM	Community fisheries-based management
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
CPUE	Catch-per-unit-effort
EEZ	Exclusive Economic Zone
EUR	Euro
FAD	Fish aggregating device
FAO	Food and Agriculture Organisation of the United Nations
FFA	Pacific Islands Forum Fisheries Agency
FPIC	Free, prior and informed consent
GDP	Gross domestic product
GGGI	Global Green Growth Initiative
GIS	Geographical Information Systems
HIV	Human immunodeficiency virus
JICA	Japan International Cooperation Agency
LLG	Local Level Government
LMMA	Locally managed marine area
MEMCC	Marine Environmental Management and Conservation Committee
MinPA	Minimum Priority Activity
MOU	Memorandum of understanding
MPA	Marine protected area
MSG	Melanesia Spearhead Group
NFA	National Fisheries Authority
NFC	National Fisheries College
NGI	New Guinea Islands
NGO	Non-governmental organisation
NPOA	National Plan of Action
NYZS	New York Zoological Society
PDF	Project development fund
PEUMP	Pacific-European Union Marine Partnership
PFDP	Provincial Fisheries Development Plan
PFG	Provincial Functional Grant
PFO	Provincial Fisheries Office
PGK	Papua New Guinea kina
PNG	Papua New Guinea
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
TNC	The Nature Conservancy
UN	United Nations
UNDP	United Nations Development Programme
US	United States
USP	University of the South Pacific
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature

ACKNOWLEDGMENTS

The Pacific-European Union Marine Partnership (PEUMP) Programme addresses some of the most serious challenges faced by Pacific countries. Among these are the increasing depletion of coastal fisheries resources; the threats to marine biodiversity, including negative impacts of climate change and disasters; the uneven contribution of oceanic fisheries to national economic development; the need for improved education and training; and the need to mainstream a rights-based approach and to promote greater recognition of gender issues to ensure inclusiveness and positive changes for Pacific island people. The five-year PEUMP programme is funded by the European Union (EUR 35 million) and the government of Sweden (EUR 10 million). It is implemented by the [Pacific Community \(SPC\)](#), the [Forum Fisheries Agency \(FFA\)](#), the [Secretariat of the Pacific Regional Environment Programme \(SPREP\)](#) and the [University of the South Pacific \(USP\)](#) in close collaboration with Non-Government Organisations and the national authorities.

A. NAME OF COUNTRY: PAPUA NEW GUINEA

Papua New Guinea (PNG), which occupies the western half of the island of New Guinea, is located in western Melanesia in the South Pacific Ocean. During the 19th and early 20th centuries, Germany controlled the north-eastern region of mainland New Guinea and adjacent islands (known as German New Guinea), the British controlled south-western mainland New Guinea (known as British Papua), and the Dutch administered western New Guinea. When Germany lost its overseas territories after World War I, German New Guinea was handed over to British rule (forming Papua and New Guinea), and later to Australia, where the territory was known as Papua New Guinea. (The Dutch handed western New Guinea to Indonesia in 1969, where the region was known as Irian Jaya, and later Papua). In 1975, Australia granted PNG independence, with the administrative capital city located at Port Moresby. A Commonwealth nation, PNG's political system is based on the Westminster System of Great Britain, and the monarch of the United Kingdom – currently Queen Elizabeth II – is the head of state. Independent PNG is divided into four regions, 22 provinces (including the National Capital District and the Autonomous Region of Bougainville), 89 districts, and 319 Local Level Government (LLG) jurisdictions. The country has a decentralised system of government, with national, provincial, district, local and ward levels of government and administration.

The mountainous interior of PNG is flanked by lowland regions that support tropical rainforests, savannahs, flood plains, and large river systems. PNG's coastline includes the second-most floristically rich mangroves on earth, seagrass meadows, and extensive coral reefs that comprise 76% of all described hard coral species and over 2,200 reef fish species. In total, around 13,840 km² of PNG's coral reefs lie within the Coral Triangle ecoregion, the world's focal point for marine biodiversity (Spalding *et al.*, 2001). Beyond the shelf seas, the exclusive economic zone of PNG's territorial waters encompass 3,120,000 km² (Govan *et al.*, 2013) and can descend to over 5 km in the New Britain Trench. Such geographic variety is reflected in the nation's biological and anthropological diversity. New Guinea has the most plant species (13,500 species) of any island on earth (Cámara-Leret *et al.*, 2020), more species of bird than all of North America, and the second richest seas after Indonesia. With regards to human culture, PNG is the world's most heterogeneous nation, with over 830 living languages and myriad tribal cultures (Gordon, 2008). As with other parts of Melanesia, the human communities of PNG have customary ownership over land and coastal resources, which may have been in place through tenure systems for centuries. Today, 97% of all land and coastal resources in PNG are held under traditional customary ownership (Lam, 1998; Ruddle *et al.*, 1992). Traditional and cultural practices still prevail, although the teachings of Christian Church denominations also permeate modern society. The PNG economy is focused on the extraction of natural resources, including gold, silver, copper, and other minerals, as well as timber and forestry products, fish and shellfish, and cash crops, such as sugar, palm oil, copra and coffee. Mineral extraction during recent decades led to steady economic growth; however, the dependence on natural resources, coupled with low levels of governance and limited socioeconomic development, has led some economists to view PNG as a nation experiencing the Resource Curse: a theory that states that natural resources lead to low rates of socioeconomic growth.

PNG is considered one of the world's most underdeveloped nations, with low levels of welfare for most nationals. Since the early 1960s, the population of PNG has increased four-fold, from around 2 million in 1960 to 8.59 million in 2019, and today over 40% of the population is less than 14 years old (World Bank Data, 2019). To date, there has been little increase in per capita gross-domestic product (GDP) since the

country gained independence in the mid-1970s, and this is unlikely to change due to population growth. Around 88% of PNG's population is rural, with some regions experiencing poor infrastructure and limited access to basic amenities, including potable water, sanitation, healthcare and education. Typically, with the exception of church groups, there are insufficient civic-society organisations within the country. Church groups are often a key driving force in many areas of PNG, which assist with the management of healthcare and education services. The PNG political system increasingly relies on electing independent members of parliament, who may bargain their way to power to gain personal benefits. Since the late-1990s, increased institutionalised corruption has seen a decline in the role of the state; despite this, many nationals view the state as a provider of goods and services. Politics is often viewed as a business and a means for making money, leading to a rise in corruption and nepotism and a failure to implement long-term policies or legislation. Although PNG experienced recent economic growth, Asian Development Bank data indicates that 37.5% of the population was living under the national poverty line in 2017. PNG has one of the highest domestic violence rates in the world, and women are less likely to gain formal employment than male counterparts. According to the World Health Organisation, there has been a rise in HIV, malaria and drug-resistant strains of tuberculosis in PNG during recent years, and the country currently has one of the lowest health care expenditures in Oceania, which in 2014 was about 4.3% of the total GDP.

Although mining and forestry are key land-based primary industries, marine environments provide important livelihood options for residents and communities in coastal regions. Fisheries can range from large-scale industrial fleets in open ocean systems through to community subsistence and artisanal level fisheries in inshore areas (Bell *et al.*, 2013). National level fisheries provide an important source of revenue for the government, with a total market value generating some 350 to 400 million PNG kina (PGK) per year (approximately half of which derives from the national tuna fleet). There are plans to expand PNG's tuna fishery, although this will require both national and regional linkages and cross-nation negotiations, considering the distribution of tuna stocks that pass national boundaries. Small-scale fisheries support traditions and customs and provide protein sustenance, micronutrients, and – more recently – incomes for families and villages; currently, around 80% of PNG's fish catch originates from community-based subsistence and artisanal fisheries in coastal regions (Bell *et al.*, 2015). Since the early 1980s, sea cucumber harvesting in PNG has increased, which led to a moratorium on the fishery from 2009 to 2017 (Hair *et al.*, 2016); during recent years, the sea cucumber fishery has opened periodically. Illegal, unreported and unregulated fishing and fisheries actions are a threat to the sustainable management of PNG's inshore and offshore fisheries.

B. IMPLEMENTATION PARTNERS IN THE PROJECT AND ROLES

The main implantation partner for the LMMA-PEUMP project is the Wildlife Conservation Society (WCS). Founded in 1895 as the New York Zoological Society (NYZS), WCS is now active in over 60 counties across five continents and in 16 major ecoregions. PNG is part of the WCS Melanesian region, which also includes Fiji and Solomon Islands. WCS has been working in PNG since the 1980s, with the head office based in Goroka, Eastern Highlands Province. WCS also has field offices in New Ireland Province and Manus Province, and policy officers based in the Conservation and Environment Protection Authority (CEPA) building in Port Moresby, the nation's capital. An overview of the main WCS staff involved in the LMMA-PEUMP project has been provided in Table 1.

Table 1: Key staff from the Wildlife Conservation Society, based in Papua New Guinea, and their positions. An outline of the roles, responsibilities and capabilities of each staff member, and how such capabilities will benefit the LMMA-PEUMP project has been provided.

Staff name	Positon	Location	Roles, responsibilities and capabilities
Stacy Jupiter	Melanesia Director	Suva, Fiji	Provides technical oversight and support for the project and activities.
Ambroise Brennier	Country Director	Goroka, PNG	Provides technical oversight and support for the activities.
Ranjit Topno	Senior Finance Manager	Goroka, PNG	Provides financial oversight and support for the project and activities.
Annisah Sapul	New Ireland Programme Manager	Kavieng, PNG	Project management and implementation. Stakeholder consultations and meetings. Oversees community engagement. Sets budgets. Conservation deeds and policy work.
Kathleen Waninara	Finance and Administration Assistant	Kavieng, PNG	Ensures financial support for project activities. Administration duties.
Elizah Nagombi	Senior Marine Biologist	Kavieng, PNG	Leads field trips, conducts statistical analysis, and produces reports. Survey designs. Stakeholder meetings. Competent with <i>ArcGIS</i> and <i>R</i> . Training, outreach, education and awareness.
Tracey Boslogo	Marine Conservation Officer	Kavieng, PNG	Leads community field trips, including mud crab training for female fishers. Stakeholder meetings. Information dissemination. Training, outreach and awareness. Data entry.

Uali Kula	Shark and Ray Research Assistant	Kavieng, PNG	Assists with data entry and field trips, including sea cucumber training activities. Outreach and awareness.
Yvonne Wong	Community Engagement Officer	Kavieng, PNG	Conducts community engagement. Leads field trips. Communication, education and awareness. Information dissemination.
July Kuri	Community Engagement Officer	Kavieng, PNG	Conducts community engagement. Leads field trips. Communication, education and awareness. Information dissemination.
Oregon Bolom	Driver and Logistics Officer	Kavieng, PNG	Assists with logistics and arranges equipment for field trips.
Grace Dom	Legal Advisor	Port Moresby, PNG	Provides legal advice and drafts policies and laws for marine and fisheries management. Focuses on conservation deeds and Local Level Government laws.
Lester Siri	Senior Policy Officer	Port Moresby, PNG	Provides legal advice concerning marine management legislation and enforcement. Office located in the CEPA building, Port Moresby.
Evangelyn Kove	Marine Policy Consultant	Port Moresby, PNG	Positioned in the CEPA building, Port Moresby. Provides policy support to CEPA. Supports the CEPA MPA branch. Assists the WCS marine team in Kavieng.
Alex Fanaso	Communication Officer	Goroka, PNG	Produces posters, leaflets and other communication pieces for information dissemination, education, awareness and data repatriation
Jonathan Booth	Marine Conservation Advisor	Kavieng, PNG	Marine management and conservation technical oversight. Project planning and implementation. Education, communication and awareness. Stakeholder meetings. Policy.

The LMMA-PEUMP project requires the interaction of implementation partners from a number of different government, private and non-governmental groups in New Ireland Province and elsewhere in PNG, as well as coastal communities in New Ireland Province. The key implementation partners in the project, as well as their roles and responsibilities and links to the LMMA-PEUMP activities, has been presented in Table 2.

Table 2: Key partners involved in the LMMA-PEUMP project in Kavieng, New Ireland Province, including the organisations the partners work for, and their roles and responsibilities for implementing community-based fisheries management in the province. The specific activities under the LMMA-PEUMP project, within which the partners will be involved in implementing, have been included. For details of the LMMA-PEUMP project activities, refer to Table 9 and Section E.

Organisation	Contact name	Position	Roles and responsibilities	Project activities within which partners will be involved in implementing
Conservation and Environment Protection Authority (CEPA)	Bernard Suruman	Manager for Marine Protected Areas	Oversees marine protected area development, implementation and enforcement in PNG.	Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.
National Fisheries Authority (NFA)	Brian Kumasi	Executive Manager	Oversees the departments of the NFA, including policy, enforcement, and compliance. Tuna fishery specialist.	Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.
National Oceans Office	Grace Kaue	Oceans Policy Legal Advisor	Coordinated the development of the National Oceans Policy in 2020. Assisted with mapping PNG Exclusive Economic Zone.	Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.
New Ireland Provincial Government	Gideon Bogosia	Director of Economic Sector	Oversees departments in the Economic Sector, including forestry, fisheries, primary industries, environment and climate change, in New Ireland Province.	Activity 1.1: Facilitate annual meetings of LMMA practitioners in New Ireland Province. Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings. Activity 2.4: Coordinate meetings between New Ireland Provincial Fisheries Office staff and LLG Fisheries Coordinators to ensure alignment of Provincial Fisheries and LLG work plans.
	Stanly Paulus	Manager of Environment	Oversees environment and climate change developments within New Ireland Province.	Activity 1.1: Facilitate annual meetings of LMMA practitioners in New Ireland Province. Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.

New Ireland Provincial Government	Gregory Roaveneo	Director of Planning	Oversees transport and planning in New Ireland Province. Coordinator for the 2021 New Ireland Province census.	Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.
	Monica Harris	Director of Public Relations, Media and Protocol	Coordinates public relations for the Governor of New Ireland Province, as well as media protocol for the government. Involved in the tourism sector.	Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.
	Edward Wesley	Director of Law and Order	Oversees all law and order-related activities in the province, including enforcement and compliance.	Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.
New Ireland Provincial Fisheries Office	Gerald Logai	Acting Director	<p>The newly appointed acting director for the New Ireland Provincial Fisheries Office. Oversees the work carried out by the provincial fisheries officers and LLG fisheries officers in all 10 LLGs of New Ireland Province.</p>	<p>Activity 1.1: Facilitate annual meetings of LMMA practitioners in New Ireland Province.</p> <p>Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.</p> <p>Activity 2.1: Mentor New Ireland Provincial Fisheries Office staff to develop and implement annual work plans.</p> <p>Activity 2.2: Generate an information data base of fisheries management and development needs, and provide training to Provincial Fisheries Office staff on knowledge management.</p> <p>Activity 2.3: Work with Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.</p> <p>Activity 2.4: Coordinate meetings between New Ireland Provincial Fisheries Office staff and LLG fisheries coordinators to ensure alignment of Provincial fisheries and LLG work plans.</p>

New Ireland Provincial Fisheries Office	Emmanuel Tamba	LLG Fisheries Coordinator	Overseas the work conducted by the LLG Fisheries Officers. Aquaculture specialist. Attends annual meetings. Provides training to communities of fisheries methods.	<p>Activity 1.1: Facilitate annual meetings of LMMA practitioners in New Ireland Province.</p> <p>Activity 2.1: Mentor New Ireland Provincial Fisheries Office staff to develop and implement annual work plans.</p> <p>Activity 2.2: Generate an information data base of fisheries management and development needs, and provide training to Provincial Fisheries Office staff on knowledge management.</p> <p>Activity 2.3: Work with Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.</p> <p>Activity 2.4: Coordinate meetings between New Ireland Provincial Fisheries Office staff and LLG fisheries coordinators to ensure alignment of Provincial fisheries and LLG work plans.</p>
	Shumarc Pomoso	LLG Extension Fisheries Coordinator	Conducts awareness on sustainable fisheries within Tikana LLG. Assists with fisheries initiatives, such as fish aggregating device (FAD) deployment and freshwater aquaculture development. Writes proposals and provides technical advice for funding.	<p>Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management.</p> <p>Activity 2.1: Mentor New Ireland Provincial Fisheries Office staff to develop and implement annual work plans.</p> <p>Activity 2.3: Work with Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.</p> <p>Activity 2.2: Generate an information data base of fisheries management and development needs, and provide training to Provincial Fisheries Office staff on knowledge management.</p>
	Hillary Meria	Fisheries Data Collector	Conducts fishery and market surveys, including stock abundance surveys for sea cucumbers and mud crabs, for all New Ireland Province. Enforcement and compliance.	<p>Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management.</p> <p>Activity 2.1: Mentor New Ireland Provincial Fisheries Office staff to develop and implement annual work plans.</p> <p>Activity 2.2: Generate an information data base of fisheries management and development needs, and provide training to Provincial Fisheries Office staff on knowledge management.</p>

New Ireland Provincial Fisheries Office	Naomi Lagia	Fisheries Data Collector	Conducts fishery and market surveys, including stock abundance surveys for sea cucumbers and mud crabs, for all New Ireland Province.	<p>Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management.</p> <p>Activity 2.1: Mentor New Ireland Provincial Fisheries Office staff to develop and implement annual work plans.</p> <p>Activity 2.2: Generate an information data base of fisheries management and development needs, and provide training to Provincial Fisheries Office staff on knowledge management.</p>
	Vanessa Emos	Fisheries Data Collector	Conducts fishery and market surveys, including stock abundance surveys for sea cucumbers and mud crabs, for all New Ireland Province.	<p>Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management.</p> <p>Activity 2.1: Mentor New Ireland Provincial Fisheries Office staff to develop and implement annual work plans.</p> <p>Activity 2.2: Generate an information data base of fisheries management and development needs, and provide training to Provincial Fisheries Office staff on knowledge management.</p>
National fisheries College	Jeff Kinch	Principal	Ensures the provision of high-quality and appropriate technical and practical training to the fisheries sector to enhance production, processing and capacity, and contribute to the PNG national economy.	<p>Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.</p>
Ailan Awareness Inc.	John Aini	Director	Revive traditional methods of marine and fisheries management. Community engagement, outreach and education. Anthropology. LMMAs. Policy development. Fisheries monitoring.	<p>Activity 1.1: Facilitate annual meetings of LMMA practitioners in New Ireland Province.</p> <p>Activity 1.2: Mentor community champions in New Ireland Province and share knowledge through cross-site exchanges.</p> <p>Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings.</p> <p>Activity 2.3: Work with Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.</p>

Global Green Growth Initiative	Sharon Tubal	Provincial Officer	Provincial project coordinator for GGGI work, and collaboration between provincial government representatives and other stakeholders.	Activity 1.4: Support community representatives to participate in the New Ireland Province Technical Working Group meetings. Activity 2.3: Work with New Ireland Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.
Locally Managed Marine Areas Network	Caroline Vieux	Coordinator	Coordinates the LMMA Network across the South Pacific island nations.	Activity 1.1: Facilitate annual meetings of LMMA practitioners in New Ireland Province.
Emirau Seafood Products	Reinhardt Mangels	Manager. Major New Ireland Province sea cucumber buyer.	Major provincial buyer of sea cucumbers and other sea food products.	Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management. Activity 2.3: Work with New Ireland Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.
	Rosemary Schreyl	Local sea cucumber processor and buyer.	Sea cucumber processing, buying and selling.	Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management. Activity 2.3: Work with New Ireland Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.
	Pokanau Salapan	Local sea cucumber processor and buyer.	Sea cucumber processing, buying and selling.	Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management. Activity 2.3: Work with New Ireland Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.
	Arthur Jones	Managing Director	Mud crabs, lobster and sea cucumber buying and processing.	Activity 1.3: Developing networks of fishers around sea cucumber and mud crab knowledge exchange in New Ireland Province for improved livelihoods and management.

C. NATIONAL CONTEXT FOR COMMUNITY-BASED FISHERIES MANAGEMENT

Government strategy to support communities and achieve coastal fisheries management

During the past decade, leaders from the Pacific Island nations initiated several regional fisheries-based management policies and initiatives, demonstrating a strong regional commitment to the development and management of coastal fisheries in Oceania. Such initiatives include:

- Melanesian Spearhead Group Roadmap for Inshore Fisheries Management and Sustainable Development: MSG, Roadmap 2015-2024
- The Noumea strategy: A new song for coastal fisheries – pathways to change: SPC, 2015
- Future of Fisheries: A Regional Roadmap for Sustainable Pacific Fisheries, Pacific Islands Forum Fisheries Agency (FFA), 2015
- Framework for a Pacific Oceanscape, endorsed by the Pacific Forum Leaders in 2009

As with other countries and regions in Melanesia, the communities of PNG have customary ownership over land and inshore areas and associated resources, through tenure systems that may have been in place for generations. PNG Acts of Parliament enable the state to have access to the national seas within PNG's Exclusive Economic Zone (EEZ), while also acknowledging community fishing rights and ownership of inshore fisheries resources. A number of statutes – or Acts of Parliament – have been passed by PNG Parliament that could allow for the protection or enforced management of marine and coastal resources in inshore areas, including:

- Fisheries Management Act, 1998 (amended in 2015)
- Maritime Zones Act, 2015
- Organic Law on Provincial and Local-level Governments, 1998
- Mining Act, 1992
- Lands Act, 1996
- Oil and Gas Act, 1998
- Unconventional Hydrocarbons Act, 2015
- Environment Act, 2000

A Protected Areas Bill was developed and submitted to Parliament, but at the time of writing was pending activation.

The Fisheries Management Act, 1998 (amended in 2015), states the roles and responsibilities of the National Fisheries Authority (NFA) for managing and regulating PNG's fisheries in inshore and offshore environments within PNG's EEZ. The Fisheries Management Act (1998) focuses primarily on the commercial and industrial fishing sector, such as the tuna fishery (which comprises roughly half of PNG's fisheries revenue), rather than small-scale artisanal and subsistence fisheries, which in 2007 comprised about 80% of all PNG's fishing activities. Although the Fisheries Management Act (1998) acknowledges the customary rights and ownership of marine resources to coastal communities, it does not grant power to Provincial, District or Local Level jurisdictions to manage coastal fishery resources. Rather, the Organic Law on Provincial and Local Level Governments (LLGs), 1998, can empower provincial governments to manage and regulate fisheries and other marine resources at provincial, district or local levels, such as through LLG laws. Examples of LLG laws that have been implemented for marine resource management include:

- The Lovongai Marine Environment Management Bill, New Ireland Province: Developed in 2013 and submitted to the Department of Provincial and Local Level Governments in 2014; the bill was developed by John Aini (Ailan Awareness Inc., a local non-governmental organisation) and the Wildlife Conservation Society (WCS). In July 2019, the LLG law was passed, formalising marine and coastal management measures in Lovongai LLG, New Ireland Province. In 2020-2021, WCS will amend the Lovongai Marine Environment Law in order to enforce a marine protected area (MPA) in Lovongai LLG, and develop a new LLG law for Murat LLG (which lies approximately 160 km north-west of Kavieng, the provincial capital on mainland New Ireland), where a second MPA will be located. Together, the two MPAs will cover at least 7,500 km².
- The Louisiade LLG Environment Bill, Milne Bay Province: Developed in 2000, the bill includes marine management regulations. (Maramatana LLG, also in Milne Bay Province, drafted an LLG law with Conservation International (CI), although this is still awaiting approval from the Milne Bay Provincial Executive Council).
- The Talasea, Bialla and Hoskins Marine Environment Management Laws, West New Britain Province: In 2004, The Nature Conservancy (TNC) assisted the Talasea, Bialla and Hoskins LLGs to develop Marine Environment Laws to enforce a network of MPAs in Kimbe Bay.
- The Manus Marine Resources Protection Act (1989) and the Manus Provincial Management Policy for Fish Aggregating Devices (2013), Manus Province: Both were developed by the Manus Provincial Fisheries Office, although it remains unclear whether they have been passed or have been implemented.

A number of fisheries management policies have been established in PNG, including the National Tuna Long-line Policy, the National Aquaculture Policy, and the National FAD (Fishing Aggregating Device) Management Policy. The NFA also employs other tools to support sustainable fisheries management and the development of inshore fisheries in PNG; such mechanisms include memoranda of understandings (MoUs), Provincial Fisheries Grants (PFGs) to Provincial Fisheries Officers (PFOs), Project Development Funds (PDFs), and provincial fisheries planning support. According to Govan (2018), some PFGs ranged from PGK 1 to 3 million per year, which were distributed to support five year Provincial Fisheries Development Plans (PFDPs) that can be developed by each province with assistance from the NFA. As of late-2015, the majority of provinces had final PFDPs; however, low capacity for requesting or financing these funds, coupled with allegations of misuse, limited their level of implementation. Indeed, since 2017, it remains unclear how many PFDPs remain active.

Under Section 28 of the Fisheries Management Act (1998), fisheries management plans can also be developed, with examples in including:

- National Tuna Management Plan
- National Beche-de-mer Management Plan
- Barramundi Fishery Management Plan
- Torres Strait and Western Province Tropical Rock Lobster Management Plan
- Gulf of Papua Prawn Fishery Management Plan
- National Shark Long-line Fishery Management Plan
- National Live Reef Food Fish Fishery Management Plan

In 2017, the NFA developed a Roadmap for Coastal Fisheries and Marine Aquaculture for Papua New Guinea: 2017-2026, based on the outcomes of the Melanesia Spearhead Group Roadmap. The NFA

Coastal Fisheries Roadmap provides a framework for the management and development of inshore fisheries and, using work plans and MoUs, aims for joint-implementation across all 15 maritime provinces.

The Coastal Fisheries Roadmap has three main objectives:

- i. Establishing an enabling environment to fully implement effective policies, legislation, management frameworks, coordination, and financing mechanisms
- ii. Ensuring suitable capacity development and access to information for capacity building, education and awareness-raising activities, and ensuring the provision of information for the management and sustainable development of coastal resources and marine aquaculture by all stakeholders, with a particular emphasis on women and youth
- iii. Managing coastal resources for sustainable development and maintaining and restoring coastal resources to secure long-term social and economic benefits for coastal and island communities

The three objectives of the Coastal Fisheries Roadmap will be met through the following main approaches:

- Maximising the potential of communities and clarifying roles and responsibilities
- Providing relevant information for communities and government managers
- Re-focusing fisheries agencies to support local coastal fisheries management
- Creating partnerships to ensure wider policy impacts

Since 2009, PNG has been an active member of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF). PNG activities under the CTI-CFF are administered and managed by the National Coordinating Committee (NCC) which comprises line government departments and other implementing partners (Coral Triangle Initiative, 2017). The role of the NCC is to coordinate all implementation efforts agreed to by the PNG Government in the PNG Marine Program National Plan of Action (NPoA). The NPoA has five goals: (i) seascapes, (ii) ecosystem approaches to fisheries management, (iii) marine protected areas, (iv) climate change adaptation, and (v) threatened species management. Funding for the projects and programmes for the NPoA comes from the PNG Government through implementing agencies, such as the CEPA, NFA and the Climate Change and Development Authority (CCDA). According to CEPA, 10 of the 15 maritime provinces are currently actively engaged in the NPoA, with support from the United Nations (UN) Food and Agricultural Organisation (FAO), the Asian Development Bank (ADB), the Pacific Community (SPC), the World Wide Fund for Nature (WWF), WCS, The Nature Conservancy (TNC), Conservation International (CI), Secretariat of the Pacific Regional Environment Programme (SPREP), the United Nations Development Programme, Japan International Cooperation Agency (JICA), the United States Government, the Australian Government, and local NGOs. Examples of projects that were implemented from 2009 to 2019, which are in line with the NPoA, include:

- FAD projects conducted in East Sepik Province; coordinated by NFA
- FAD, sea cucumber, and financial scheme projects in Madang province; coordinated by CCDA and UNDP (2014-2015)
- Coastal clean-up campaigns and the Bootless Bay Marine Protected Area in the National Capital District and Central Province; coordinated by CEPA and JICA (2015-2020)
- Kairiku women upscaling projects through LMMAs, inclusive of mangrove management and mud crab supplying; coordinated by PNGCLMMA in Central Province
- LMMA networks, satellite tracking of manta rays, turtle tagging, and mangrove management training in Milne Bay province; coordinated by TNC and Eco-Custodian Advocates (ongoing)

- Coastal fisheries management, LMMA networks, FADs, and giant clam farming in Manus Province; coordinated by WCS, 2017 to 2018
- Spatial mapping, coastal fisheries management, resource management, marine protected areas, LMMAs, and livelihoods training in New Ireland Province; coordinated by WCS (ongoing)
- Ridge to Reef planning documents, developed under the Seascapes goal, in West New Britain Province; coordinated by TNC

From 2020 to 2024, CEPA proposes the following plans: (i) the full participation of all maritime provinces in inshore fisheries and marine resource management initiatives, which will cover 30 maritime districts; (ii) at least 50% of all coastal and island wards, encompassing more than 260 communities, reached with fisheries management plans, training and extension services; (iii) the completion of 40 community-based fisheries management plans in at least five provinces; and (iv) the endorsement of investment plans, with cost estimates for all activities, within the financing plan from national and provincial governments (19%) and donors (81%).

Non-governmental organisation relevant projects

Since the 1970s, a number of international and local non-governmental organisations (NGOs) have been working in PNG's coastal provinces. NGO work includes developing and implementing a number of coastal marine management initiatives, including community-based fisheries management approaches. Table 3 outlines some of the NGOs that have recently been working in PNG's coastal regions.

Estimated total number of coastal communities in Papua New Guinea and numbers per province involved in community-based fisheries management

There are 22 province-level divisions in (PNG), 15 of which have coastlines and are considered maritime provinces. Seven provinces (Eastern Highlands, Chimbu, Jiwaka, Western Highlands, Enga, Southern Highlands and Hela provinces) are located in the PNG Highlands and do not have coastlines. The Autonomous Region of Bougainville comprises PNG's third largest island and neighbouring islands. Due to the civil war in Bougainville, which lasted from 1988 to 1998, the province was granted autonomy in 2002, and in 2019, over 97% of the local population voted for Bougainville to become an independent state. The PNG capital city, Port Moresby, is located in National Capital District. Table 4 provides information on the population for each coastal province (information obtained from the 2011 PNG National Housing and Population Census). Efforts were made to quantify the number of coastal communities in each province; however, there is a lack of reliable data concerning coastal community numbers across the country.

In coastal regions, commercially important fisheries include sea cucumbers, shellfish, crustaceans, reef fish and shark fins. According to the NFA, PNG coastal fisheries production in 2007 was 35,000 tonnes, of which 80% was derived from subsistence fishing (Bell *et al.*, 2015). Estimates of annual subsistence fisheries catches in PNG range from 20,600 to 30,000 tonnes, with most of this catch consumed by community residents. In coastal regions, fish consumption estimates range from 4.8kg per capita to 24.9kg per capita, and with 90% of fish and shellfish harvested by subsistence fishers taken from coral reef, sea grass beds or mangroves (information obtained from A Roadmap for Coastal Fisheries, 2017).

Table 3: Non-governmental organisations (NGOs) that have been working in Papua New Guinea during recent decades. The coastal provinces where NGO project work has taken place has been included. Only NGO work that occurred in coastal regions has been included. The NGOs have been listed in alphabetical order.

Non-governmental organisation	Coastal provinces with current project work	Details
Adventist Development and Relief Agency	National Capital District, Oro, Morobe, Madang, East Sepik, West New Britain, East New Britain, New Ireland provinces, and the Autonomous Region of Bougainville	Sanitation, hygiene, and site protection. Potable water and water supplies. Implementing climate change resilience plans. Agriculture and food security. Forest rehabilitation. Natural disaster risk reduction. Adult literacy programmes. Small-scale enterprise development programmes. HIV and AIDS work.
Ailan Awareness Inc.	New Ireland Province	Reviving traditional marine and coastal resource management measures at the community level. Community champion exchange visits. Cultural anthropology and customs. Communication and outreach. Education and awareness. Opportunities for international students and internships.
Conflict Islands Conservation Initiative	Milne Bay Province	Shark and turtle conservation. Volunteering. Education and outreach. Scuba diving. Female empowerment, especially concerning marine management.
Conservation International	Milne Bay Province	Left the country: Passed on responsibility to Eco-Custodian Advocates.
Eco-Custodian Advocates	Milne Bay Province	Currently working directly with 8 communities, and indirectly with a further 8 communities. Community outreach and awareness. Reviving traditional methods. Using Smart Phone methods for data collection and information dissemination. Youth training. Communication outreach, including the production of videos to showcase marine management work. Fish studies. Shark and turtle work. Sustainability.
Mahonia Na Dari	West New Britain Province	Education, awareness and outreach. Biological monitoring. Arranging for exchange students from international universities. Library and laboratory facilities. Worked with The Nature Conservancy to establish a network of marine protected areas in West New Britain Province.
Mas Kagin Tapani	Madang Province	Conservation of leatherback turtles, through the Sea Turtle Restoration Project. Education and awareness. Implementing conservation deeds. LMMAs.

Papua New Guinea Centre for Locally Managed Areas	Central and Gulf provinces	Established in 2009. Originally focused on coordinating LMMA communities to enable information dissemination. Presently focused on mud crab farming and mangrove restoration work. In 2020, coordinated surveys concerning impacts of the Covid-19 virus on community fishers.
Piku Biodiversity Network	Gulf and Western provinces	Community engagement. Research, community led conservation, education and awareness. Sustainability. Provides a platform for international scientists to conduct research in Papua New Guinea. Freshwater turtle conservation. Sawfish and river shark research. Barramundi swim bladders research.
The Nature Conservancy	West New Britain, Manus, Madang and Milne Bay provinces	Established a network of marine protected areas and locally managed marine areas in Kimbe Bay, West New Britain Province. Biological studies and monitoring. Collaborated with Mahonia Na Dari. Worked on grouper life history biology in Manus Province. Developed the 'Mangoro Market Meri' initiative to empower female fishers harvesting invertebrates from mangroves.
West Coast Development Foundation	New Ireland Province	Advocates for preventing seabed and deep sea mining in the Bismarck Sea. Education, outreach and awareness.
Wildlife Conservation Society	New Ireland and Manus provinces	Established community-driven locally managed marine areas, with fisheries management plans, in 13 communities in New Ireland Province and 10 communities in Manus Province. Currently establishing two community driven marine protected areas in New Ireland Province. Education, awareness, outreach, community engagement, and stakeholder meetings. Shark and ray research and management. Fish aggregating devices. Gillnet exchange programme.
World Wide Fund for Nature	National Capital District, Madang Province	Established a network of Marine Wildlife Management areas in Madang Province. Shark and ray work, including leading the establishment of the 2020 Papua New Guinea Shark and Ray National Plan of Action.

Table 4: The populations of the maritime provinces of Papua New Guinea. The provinces have been arranged in geographical order, starting with National Capital District, followed by: (i) the provinces in the Papua region (Southern region), which borders the Gulf of Papua and Solomon Sea; (ii) the provinces in the Momase region (which comprises the northern coast of mainland Papua New Guinea); and (iii) the provinces of the New Guinea Islands region, which border the Bismarck Sea, Solomon Sea and Pacific Ocean. The population data were obtained from the 2011 National Housing and Population Census, the last census that occurred in Papua New Guinea. Although efforts were made to quantify the number of coastal communities in each province, reliable data remains unknown.

Country	Region	Population	Description
Papua New Guinea	Melanesia, Oceania	8.59 million	Located in western Melanesia, Papua New Guinea comprises the eastern half of the island of New Guinea and adjacent islands. With a heterogeneous population that speaks over 830 languages, PNG nationals retain strong links to community clans, land and coastal areas through customary ownership based on community tenure.
Province	Region	Population	Description
National Capital District	Papua (Southern) region	364,125	The capital of PNG is Port Moresby, located within the National Capital District. Although predominantly urban, the National Capital District also supports small-coastal communities, some of which were forced by encroaching urbanisation to live in stilt-villages along the coast. The Conservation and Environment Protection Authority (CEPA) and the Japan International Cooperation Agency (JICA) coordinated a coastal clean-up campaign in the region.
Central Province	Papua (Southern) region	269,756	Provincial Capital: Port Moresby. Central Province surrounds the National Capital District. The PNG CLMMA has been working with communities in Kairuku Local Level Government jurisdiction in Central Province to establish LMMAs within community customary waters, which included upscaling projects for female fishers and small-scale mud crab farms in coastal mangrove systems. An effort was by JICA to establish a marine protected area in Bootless Bay, just east of the National Capital District.
Milne Bay Province	Papua (Southern) region	276,512	Provincial capital: Alotau. The south-eastern region of PNG, including many island groups that extend into the Solomon Sea and Coral Sea. Milne Bay comprises matrilineal societies, where women are the land owners, and land is passed along female blood lines. Several NGOs, including Eco-Custodian Advocates and the Conflict Islands Conservation Initiative have been working in Milne Bay for several years. The Nature Conservancy helped establish LMMAs in the province, and conducted satellite tracking of reef manta ray studies, as well as turtle tagging, and mangrove management training. Milne Bay Province is considered one of the two main tourism provinces of Papua New Guinea (together with East New Britain Province).

Oro (Northern) Province	Papua (Southern) region	186,309	Provincial capital: Popondata. Located on the south-eastern shoreline of mainland PNG, between the Owen-Stanley Mountain Range and the Solomon Sea. There was talk of conservation measures to protect the Queen Alexandra's birdwing butterfly (the world's largest butterfly species, which is native to Oro Province), yet there have been few marine or coastal conservation initiatives in the province.
Gulf Province	Papua (Southern) region	158,197	Provincial capital: Kerema. Situated on the south-central coastline of the PNG mainland, flanking the Gulf of Papua. Since 2017, the Piku Biodiversity Network has been working with 23 coastal and inland communities around the Kikori River system (western Gulf Province) to bring awareness to the pig-nose turtle and to provide a platform for international scientists to conduct research on sawfish, river sharks and barramundi fisheries in the region. Piku Biodiversity Network places a strong emphasis on community engagement and awareness. PNG CLMMA has also been working with communities in eastern Gulf Province, focused on female fishers in mangrove systems. Prawn fishing occurs in the Gulf of Papua, off Gulf Province.
Western province	Papua (Southern) region	201,351	Provincial capital: Daru. The largest and least densely populated province of Papua New Guinea, Western Province forms the most south-westerly province in the country, bordering the Gulf of Papua, Australia, Indonesian Papua and Southern Highlands Province. The Fly River delta drains from Western Province into the Gulf of Papua, and swamps dominate the lowland terrain. There are reports that some coastal villages had relocated from the shoreline to further inland during recent years. The Piku Biodiversity Network has been assisting partners that work with communities in Western Province, based around Lake Kutubu towards the border with Gulf Province. Exxon Mobil and Ok Tedi mining have conducted community awareness and environmental studies in the region. Western Province is an important site for prawn and shark fishing. The province has trade routes to Thursday Island in northern Australia.
Morobe province	Mamose region	674,810	Provincial capital: Lae. Morobe Province has a coastline that extends from around the Huon Peninsula to the Solomon Sea, adjacent to Oro Province. On the Huon Peninsula, conservation groups have been working to protect rare tree kangaroos. Coastal conservation efforts along the coast just south of Lae have focused on leatherback turtle conservation, which included attempts to attract ecotourism to the region.
Madang Province	Mamose region	493,906	Provincial capital: Madang. Located on the north-eastern coast of mainland PNG. Since 2006, the Turtle Island Restoration Network established a Sea Turtle Restoration Project in Karkum Village, Madang Province, which was taken over by the Mas Kagin Tapani Association in 2008. Conservation deeds within Karkum community were used to formalise turtle conservation efforts. Similar management areas are located on the Simbine Coast, as well as the Kimadi Conservation Area and Bagiai Wildlife Management Area, located on the volcanic island of Karkar. During

Madang Province	Mamose region	493,906	recent years, The Nature Conservancy has had a presence in the province. From 2014 to 2015, fish aggregating devices, sea cucumber fisheries work, and financial scheme projects were coordinated by the Climate Change and Development Authority and United Nations Development Programme. The World Wide Fund for Nature helped facilitate the establishment of a number of marine wildlife management areas in Madang lagoon.
East Sepik Province	Mamose region	450,530	Provincial capital: Wewak. East Sepik Province includes the central and lower Sepik River, the longest in Papua New Guinea, and borders the Bismarck Sea to the north. In the mid-2010s, the National Fisheries Authority deployed fish aggregating devices at selected sites in the province. Scientists from James Cook University, Australia, and other institutions, conducted shark and ray research in East Sepik Province in 2018, which focused on the distribution of critically endangered sawfish species, and how they are utilised by local communities. Gillnets are often used in the Sepik River delta. Crocodile attacks are a natural hazard.
West Sepik (Sundaun) Province	Mamose region	248,411	Provincial capital: Vanimo. Forms the most north-westerly province of mainland PNG, bordering the Indonesian Province of Papua to the west and Bismarck Sea to the north. In 1998, a tsunami destroyed the coastal town of Aitape, which lies on eastern coast of West Sepik (Sundaun) Province. Few conservation initiatives have taken place in the province. In January and December, the region is a popular site for surfing tourism.
Manus Province	New Guinea Islands region	61,000	Provincial capital: Lorengau. The smallest province of PNG, with the Bismarck Sea to the south and Pacific Ocean to the north. In 2017-2018, the Wildlife Conservation Society (WCS) conducted fisheries awareness and management initiatives, including the establishment of community-driven fisheries management plans, the establishment of locally managed marine areas, and the deployment of fish aggregating devices, within 10 coastal communities in the province. In the 2010s, The Nature Conservancy worked with local communities to set up a sea cucumber cooperative to enable direct exports to Hong Kong, and also worked on the life history characteristics of groupers (Family Serranidae). Josh Cinner, a social scientist based at James Cook University, conducted socioeconomic studies on the northern islands of Manus Province, including Andra, Ponam and Ahus islands.
New Ireland Province	New Guinea Islands region	194,000	Provincial capital: Kavieng. A slender limestone island, with the Bismarck Sea to the south and Pacific Ocean to the north. The location of the National Fisheries College and Nago Marine Research Facility. Since 2017, the Wildlife Conservation Society has been working with 13 communities in western New Ireland Province (Kavieng District) to establish locally managed marine areas, accompanied with community-driven fisheries management plans, which will be enforced with conservation deeds. Since 2019, the Wildlife Conservation Society visited some 80 communities in Lovongai and 20 communities in Murat Local Level Government jurisdictions to

New Ireland Province	New Guinea Islands region	194,000	establish two community-driven marine protected areas in each region. Ailan Awareness Inc., a local non-governmental organisation, has been working with communities in Kavieng District to help revive traditional marine management methods, and conducted community-champion exchange visits to showcase successful community-based marine management initiatives in the region. The West Coast Association is a vocal non-governmental organisation that advocated against seabed mining ventures in the Bismarck Sea, off the south coast of New Ireland Province.
East New Britain Province	New Guinea Islands region	328,369	Provincial capital: Kokopo. The University of Natural Resources and Environment is located in Rabaul, and the National Agricultural Research Institute is located in Keravat, south of Rabaul. East New Britain Province is considered one of the two main tourism provinces of PNG (together with Milne Bay Province). The volcanic terrain of East New Britain Province is seismically active and supports fertile soils. In 1994, a volcanic eruption destroyed the former East New Britain capital of Rabaul leading to the establishment of Kokopo as the new provincial capital.
West New Britain Province	New Guinea Islands region	264,264	Provincial capital: Kimbe. Occupying the southern and western regions of New Britain island, West New Britain Province is volcanic and seismically active. In 2007, The Nature Conservancy established a network of marine protected areas in Kimbe Bay, which covered 13,000 km ² and involved over 100 coastal communities, including some 100,000 people that live in the Kimbe Bay watershed. The network of MPAs included 15 areas of scientific interest (Green <i>et al.</i> , 2007). The Nature Conservancy also developed Ridge to Reef documents for the province. Mahonia Na Dari, a local non-governmental organisation, has been in the Kimbe Bay area for the past two decades, and includes a research laboratory and scientific library. Mahonia Na Dari also conducts extensive community-based education and outreach programmes in the region.
Autonomous region of Bougainville, North Solomons Province	New Guinea Islands region	249,358	Provincial capital: Buka. Located in the Solomon Sea, just north of the Solomon Islands, Bougainville is the most easterly province of PNG. In the late-1980s and 1990s, a civil war damaged the infrastructure and socio-economic status of the region, and the province has since voted for independence in 2019. Communities on the Cateret Islands, which lie to the east of Buka, established seaweed farms, and local residents are now considered national leaders in seaweed mariculture.

Collaboration and coordination mechanisms for cross-sectoral work within government

There are mechanisms in place for cross-sectoral coordination through the Provincial Administration. According to Govan (2018), an emphasis has been placed on provincial service delivery by the provinces, which meshes with the Budget and Expenditure instructions issued by the Secretary for Treasury (National Economic and Fiscal Commission: 2017 Budget and Fiscal Report). The provincial service delivery calls for all PNG provinces to adequately fund 11 specific service delivery activities. The 11 service delivery activities have been identified as basic provincial responsibilities across five key functional grant categories, which are: (i) Agriculture, (ii) Education, (iii) Health, (iv) Transport Infrastructure, and (v) Village Courts. The 11 service delivery activities are also known as Minimum Priority Activities (MinPAs).

The governments of each province are expected to identify activity codes for each MinPA within their respective budgets, as well as request performance reports from directors and managers of each provincial sector. The MinPAs also include extension activities for fisheries and monitoring indicators, which include: (i) the number of extension activity patrols conducted by provincial government staff, and (ii) the number of people who attend the extension activity sessions.

Collaboration and coordination between government, non-governmental organisations and communities

In 2020, the National Oceans Policy of Papua New Guinea, 2020-2030, was established by the Department of Justice and Attorney General, based in the PNG capital city, Port Moresby. A National Oceans Office was also established in Port Moresby, which aims to provide coordination and implementation of the Maritimes Zones Act, 2015. Work on the policy began following the 8th Pacific Islands Nature Conservation and Protected Areas Conference, held in 2007 in Alotau, Milne Bay Province. The aim of the policy is to guide the government and stakeholders in managing coastal and ocean systems and the natural resources that such systems contain, based on the framework of the PNG Constitution (notably the National Goals and Directive Principles, Vision 2050, and the National Development Strategy 2030). The National Oceans Policy was influenced by the United Nation's (UN's) Sustainable Development Goals and incorporates traditional knowledge and customs, including bottom-up approaches to ensure sustainability, which is intertwined with cultural heritage that concerns inshore and oceanic resource management. A key organisation that is expected to engage in the Ocean's Sector Service Delivery is the Department of Provincial and Local Level Governments. The department will be responsible for the delivery of the National Oceans Policy to the provinces and communities, and also to report on the performance of the provinces and LLGs and provide links between top-down strategies and bottom-up needs. Although the National Oceans Policy states the importance of linking with communities, there appeared to be few opportunities for communities to influence the development of the policy.

According to Yvonne Tio (Marine Environment Division Manager, CEPA), there are mechanism in place for collaboration between the PNG Government, NGOs, communities and other stakeholders. However, CEPA lacks a reporting system for storing and collating information from various stakeholders into a database; CEPA also lacks officers seconded to the provinces, so there is limited information flow concerning what is taking place on the ground. As such, work is underway to develop a reporting system and an information management system for marine conservation and resource management that falls within the PNG National Plan of Action (NPOA). Currently, CEPA-associated marine projects and activities only facilitate

and endorse donor funded projects, which require partners, such as NGOs, for implementing and reporting the outcomes. The only funding available through CEPA can be used for monitoring trips to project sites to see how projects are developing and to observe progress beyond the scope of project timeframes.

CEPA depends on partners to collect data, which can cause compliance difficulties. For instance, NFA fisheries data is not released unless a letter of intention has been presented and accepted by an NFA compliance team: as such, in July 2020, CEPA was forced to present a letter to the NFA because they did not respond through email regarding the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) sea cucumber trade ban on threatened species. Considering NFA is responsible for regulating community-based fisheries management in PNG, it is likely that the NFA has large datasets from the maritime provinces. This increases the reliance of CEPA and other government bodies on partner NGOs and other groups to conduct fisheries management and data collection at the community level.

CEPA has also signed a memoranda of understanding (MOU) with all 15 governors of the maritime provinces to take responsibility of provincial action plans, with plans to secure funding. In addition, CEPA developed policy documents with other authorities concerning community-based fisheries management, which include: (i) the PNG National Marine Plan of Action, 2019- 2023; (ii) a road map for coastal fisheries and mari-aquaculture for PNG; (iii) the PNG Policy on Protected Areas; and (iv) the National Marine Assessment Plan for PNG.

In New Ireland Province, since 2017, WCS has arranged annual or biannual Technical Working Group meetings, which are based in Kavieng, the provincial capital of New Ireland Province. The Technical Working Group acts as a steering committee for the development of two large marine protected areas (covering at least 7,500km² of marine space in both Lovongai and Murat LLGs) in the province, and which will incorporate community-driven fisheries management rules and penalties (that were selected by 80 communities in Lovongai LLG and 20 communities in Murat LLG) into respective LLG laws. The Technical Working Group also serves as a model for collaboration and coordination between key representatives from the National Government (including CEPA, NFA and other national government bodies), the Provincial Government, Local Level Governments, the National Fisheries College, local NGOs, the private sector, the law and order division, and other stakeholders.

In March 2020, Achala Abeysinghe, the PNG Country Representative for the Global Green Growth Initiative (GGGI), made an opening presentation in Kavieng town, in order to introduce the work GGGI will be involved with in the province over the next three years. GGGI has headquarters in Seoul, South Korea, and promotes green growth planning and implementation. GGGI coordinates work between the national and provincial governments of PNG, along with non-governmental organisations (NGOs), communities and other stakeholders. In PNG, GGGI is working in Mine Bay Province in south-eastern PNG, Enga Province in the PNG Highlands, and New Ireland Province in the New Guinea Islands (NGI) region. The representative from GGGI in New Ireland Province is Sharon Tubal, who will be responsible for coordinating conservation and other sustainable development work among government bodies, communities and other stakeholders in the province.

D. PROVINCIAL CONTEXT FOR COMMUNITY-BASED FISHERIES MANAGEMENT

Provincial governmental support for communities and coastal fisheries management

Since the enactment of the Organic Law on Provincial and Local Level Governments in 1998, fisheries management power was devolved from national to provincial levels across PNG. Sections 42 and 44 of the Organic Law enables provincial governments to develop and implement fisheries management laws and regulations for natural resource management and extraction, including fisheries management laws. Despite this new authority, New Ireland Province was the only PNG maritime province that did not form a Provincial Management Advisory Committee or finalise a Provincial Fisheries Development Plan. A draft New Ireland Provincial Fisheries Development Plan 2016-2020 was produced yet remains incomplete.

The Economic Sector, within the New Ireland Provincial Government, concerns fisheries, forestry, environment and climate change. The Economic Sector includes the Provincial Fisheries Office (PFO), which has a newly appointed acting manager, and nine LLG Fisheries Coordinators: five fisheries coordinators for Kavieng District and four fisheries coordinators for Namatanai District. There are also two extension fisheries coordinators and three fisheries data collectors (funded by the NFA) in New Ireland Province. Typically, the Provincial Fisheries Coordinators have received training from the National Fisheries College (NFC), based in Kavieng, New Ireland Province. Each Provincial Fisheries Coordinator reports to their respective LLG Manager. Table 5 provides the details of the Provincial Fisheries Office staff, LLG Fisheries Coordinators, and Fisheries Data Collectors in New Ireland Province.

Table 5: Details concerning the Provincial Fisheries Office staff, Local Level Government Fisheries Office Coordinators, and fisheries data collectors based in New Ireland Province, Papua New Guinea.

Organisation	Staff position	Staff name	Locations
Provincial Fisheries Office	Acting Manager	Gerald Logai	New Ireland Province
Local Level Government	LLG Fisheries Coordinator	Emmanuel Tamba	Tikana LLG
		Linette Mossi	Murat LLG
		Bernard Tabun	Lovongai LLG
		Judith Tinai	Namatanai LLG
		Sandra Aini	Nimamar LLG
		Manaon Manilias	Sentral Niu Ailan LLG
		George Tameluk *	Tanir LLG
	LLG Fisheries Extension Officer	Shurmark Pomoso	Tikana LLG
		Waitas Lasaro	Lovongai LLG
National Fisheries Authority	Fisheries data collector	Hillary Meria	New Ireland Province
		Vanessa Amos	
		Naomi Lagaia	

* The Tanir LLG Fisheries Coordinator is also the Development Primary Industries coordinator.

The Organic Law on Provincial and Local Level Governments (1998) is recognised within the PNG Constitution. Below the Organic Law are the three national arms of PNG Government: (i) the Executive, (ii) the Legislative (Parliament), and (iii) the Judicial (National Court) governmental arms. The National Government provides funding to the provincial governments of PNG, which in turn support district government; this is through development and functional grants. The National Government also funds the LLGs, with both development and functional grants, which in turn are used to provide funding to ward level governments through ward-level grants. According to Govan (2018), the annual operation budget for fisheries staff in New Ireland Province was approximately PGK 40,000, although this could not be verified due to a lack of budget sheets or work plans. Govan (2018) also stated that the NFA did not receive work plans from the New Ireland PFO, or requests for administrative grants (according to the MoUs from the New Ireland Provincial Administration) or Project Development Funds (PDFs). The Provincial Fisheries Office building, located at the Fisheries Wharf in Kavieng, New Ireland Province, has recently undergone renovation (completed in 2020), and an acting PFO manager has been appointed. The PFO has one vehicle and one boat (although no outboard motor).

In the late-2010s, a number of new Chief Executive Officers (CEOs) and Directors were hired in the New Ireland Provincial Government and Administration, including new directors in law and order, planning and health, and new CEOs in administration and finance. Stanly Paulus, the Manager of Environment for the New Ireland Provincial Government, was also hired, who oversees provincial-level environment and climate change matters and associated development issues. The current New Ireland Provincial Administrator was previously employed with the NFA and is an advocate for sustainable coastal fisheries. The recent appointment of a Provincial Fisheries Office Acting Manager, Gerald Logai, indicates an acknowledgement by the Provincial Government and Administration of the importance of managing and revitalising the provincial fisheries body, and an appreciation of the need to manage and direct human resources within the New Ireland Province Provincial Fisheries Office and associated LLG Fisheries Coordinators.

According to Govan (2018), PNG's 2017 national budget to the New Ireland Provincial Administration was around PGK 100 million per year, about 60% of which was spent on personnel (most of which to paying teaching staff). These figures do not include other sources of revenue, such as mining licenses or taxes. There are additional allocated government subsidies for the Provincial Fisheries Office, and this money is directed to the LLG Fisheries Coordinators. Each year, the New Ireland Province LLG Fisheries Coordinators receive approximately PGK 10,000, which can be used for fisheries initiatives in each LLG. LLG Fisheries Officers can also apply for Provincial Fisheries Grants (PFGs), through the New Ireland Provincial Government's Economic Sector, which can be used across the province and which can be as much as PGK 100,000. In July 2020, the Tikana LLG Fisheries Extension Coordinator applied for a PFG for conducting fisheries awareness in Ward 2 (comprising Limanak, Salapiu, Nonovaul and Enok communities) in Tikana LLG. The application was successful, and PGK 5,000 was approved. The LLG Fisheries Coordinators are responsible for developing their own annual action plans and budgets within their respective LLGs.

In early 2020, a memorandum of understanding (MoU) was signed between the New Ireland Provincial Government and the National Fisheries Authority (NFA), the details of which remained confidential at the time of writing.

National governmental support for communities and coastal fisheries management in New Ireland Province

The major fisheries and mariculture training centre in PNG is the National Fisheries College (NFC), a Business Unit of the National Fisheries Authority, located in Kavieng, New Ireland Province. As of July 2020, Jeff Kinch became the principal of the NFC (a position to which he was reappointed). The NFC provides tertiary level education and training in fisheries and aquaculture, including vertical longlining and other forms of pelagic fishing methods, on-vessel technical training, the deployment of fish aggregating devices (FADs), and methods for fisheries business development. The NFC is also linked to the Nago Island Mariculture and Research Station, which lies close to Kavieng town in Kavieng Urban LLG. The Nago facility has conducted aquaculture and mariculture work on sea cucumber ranching, inshore seaweed propagation, and breeding clownfish for the live aquarium trade. The facility also provides training on the production of jewellery and the development of handicrafts, made from seashells and other natural items, in order to encourage community-based livelihoods development, focused on female residents. The NFC has a range of facilities, including laboratories and a library, as well as a large team of trained staff with technical expertise.

Number of communities in New Ireland Province, including key livelihoods and current issues in the province

New Ireland Province has a total land area of 9,557 km², and a total sea area of 230,000 km². New Ireland Province has a population of 194,000 residents (according to the 2011 National Housing and Population Census), 80% of which live in rural areas. The province has the highest population growth rate in PNG, currently at 4.5% per year; the national average is 3.8% per annum (National Research Institute, 2010). Politically, New Ireland Province is subdivided into two districts: Kavieng District in western New Ireland Province and Namatanai District in eastern New Ireland Province. The province also contains ten LLG jurisdictions (Figure 1), which in turn are subdivided into wards. Typically, each ward contains several communities, which have customary ownership of their land and inshore resources. Each ward has a Ward Planning Committee, which may apply for ward-level grants. Individual communities – or groups of communities – may have Village Planning Committees.

At the time of writing, 77% of the population of New Ireland Province was living in the coastal zone, and typically generated income through subsistence and artisanal fishing, invertebrate gleaning, and coastal cash crop plantations, including coconuts and copra. When the moratorium on sea cucumber harvesting is lifted, the collection and processing of sea cucumbers forms a major fishery and source of revenue (Kinch *et al.*, 2008); in 2017, when the sea cucumber ban was lifted for two months, New Ireland Province households generated around PGK 4 million from sea cucumber sales (Hair *et al.*, 2019). There are 22 spoken indigenous languages in New Ireland Province, although the most commonly spoken language is Tok Pisin, a form of Pacific Pidgin derived from English and German, and all school teaching, government work and white-collared professions are conducted in English. Food security in the province remains low, with 57% of households experiencing incidents of moderate food insecurity and 22% of households experiencing severe levels of food insecurity (PNG Demographic and Health Survey, 2016-2018). Table 6 provides an overview of each LLG in New Ireland Province, including an approximation of the number of coastal communities in each LLG, as well as the key means of livelihood and income generation, and other relevant detail.

Figure 1: New Ireland Province borders East New Britain Province and West New Britain Province to the south, Manus Province to the west, the Autonomous Region of Bougainville to the east, and the Pacific Ocean to the north. New Ireland Province consists of two districts: Kavieng District in the west and Namatanai District in the east. There are ten Local Level Government jurisdictions in New Ireland, Province including Kavieng Urban and Namatanai Urban Local Level Governments. Each Local Level government is divided into wards, which often include several communities. For clarity, the landmasses of the other provinces that lie adjacent to New Ireland Province have not been included on the map.

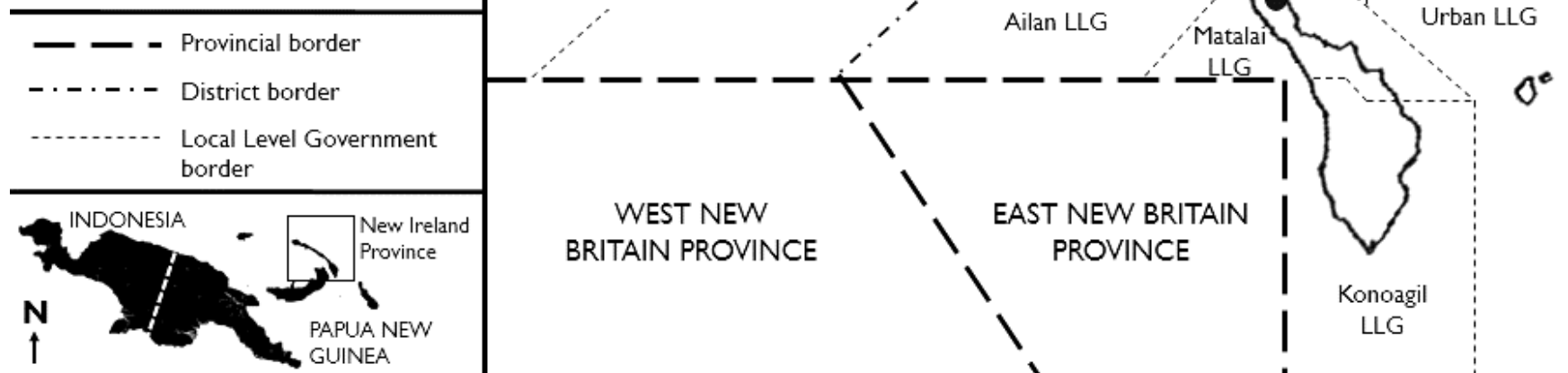


Table 6: The Local Level Government (LLG) jurisdictions, LLG populations, and estimations of the number of communities in each LLG jurisdiction in New Ireland Province, Papua New Guinea (population information was provided from the 2011 National Housing and Population Census). Key livelihoods and other details for each LLG jurisdiction, as well as the number of Provincial Fisheries Officers in each jurisdiction, has been provided.

Local Level Government jurisdiction	Population	Number of communities	Number of LLG Fisheries Coordinators	Key livelihoods and other details for each jurisdiction
Kavieng Urban Local Level Government	16,725	22	0	Location of the National Fisheries College and Nago Marine Research Facility. Kavieng Urban forms the main provincial town in New Ireland Province. Coastal communities sell fish, shellfish and other produce at the main provincial market in Kavieng. Tourism is centred on Nusa Islands Retreat, Lissenung Resort, and the Kavieng town hotels; Lissenung Resort has a hawksbill turtle nesting site. A port is located on the coastline of Kavieng. During recent years, crime levels have increased in Kavieng, while the number of police personnel has fallen due to the condemnation of the police barracks. The opening of the Kimbe-Rabaul Highway on New Britain Island may have increased local crime levels. There are plans to extend the Kavieng airstrip to enable international carriers to land in Kavieng, and also to establish a university in the province.
Tikana Rural Local Level Government	33,222	91	2	A number of LMMAs have been established in the Tigak Islands in western Tikana, including the communities of Tugalop, Bangatan, Nonovaul, Salapiu and Limanak. Shellfish and fish are typically traded and sold in the region, especially at Kavieng Market. Oil palm, cocoa and coconut plantations are located along the main highway on the Tikana mainland, and deforestation is prevalent in some areas. Small-scale freshwater tilapia fish farms have been established along the highway in five community sites on the west coast of Tikana LLG; communities assisted with the construction of the farms. Tourism sites include the giant eels at Laribina, which can be fed. A king tide in 2008 damaged many coastal areas on the east coast of Tikana LLG jurisdiction.
Lovongai Rural LLG	29,005	89	2	Five LMMAs exist in the Tsoi Islands, off north-eastern Lovongai Island, and another LMMA exists in Ungalabu Harbour, off the coast of north-western Lovongai Island. In 2022, a marine protected area will be established around

Lovongai Rural Local Level Government	29,005	89	2	<p>Lovongai Local Level Government jurisdiction, which will cover approximately 3,500km²; the rules, penalties and size of the marine protected area will be driven by the residents of 89 Lovongai communities, and will be enforced with local Level Government laws. John Aini, the founders of Ailan Awareness Inc., developed and submitted the Lovongai Marine Environment Management Bill in 2014, which was passed as an LLG Law in 2019. Shellfish, fish and turtles are sold at market, and to hotels in Kavieng town. Some areas make lime from shells, which is used during the consumption of beetle nut, a local narcotic. Small-scale tourism occurs in the Tsoi Islands and to the west of Lovongai, including Clem's Place, a local guesthouse. Rubber plantations exist in the interior of Lovongai and efforts have been made to increase the size of such plantations. The islands of Tingwon, about 30 km west of Lovongai Island, lie adjacent to cetacean migration routes. Civil unrest, due to land disputes, in south-eastern Lovongai, has recently spread to other parts of Lovongai island, leading to a number of revenge killings and beheadings.</p>
Murat Rural Local Level Government	4,210	20	1	<p>Local residents follow the Seventh-Day Adventist branch of Protestant Christianity, and villagers are therefore prohibited from eating shellfish, sharks, rays, eels, turtles and dugongs. Coastal communities typically rely on reef fish for consumption and local market sales. Murat LLG jurisdiction consists of the main island of Mussau, as well as Emirau Island and the small island of Tench. Separated from mainland New Ireland by the Ysabel Channel, Mussau lies around 160 km north-west of the mainland and is therefore geographically isolated; accordingly, the Murat LLG region is experiencing net emigration. In 2022, a community-driven marine protected area will be established in the region, and will be enforced with LLG laws. Marine management plans have been established in Lolieng village on the west of Mussau Island; during this period, Lolieng established a community based organisation (CBO), which remains active and is involved with marine management matters. Crocodile attacks and unexploded World War II ordinances (the region supported an airstrip for the United States during the early to mid-1940s) are local hazards in the region.</p>
Namatanai Urban LLG*	29,787*	9	1	<p>The main provincial town of Namatanai District, located on the east coast of central mainland New Ireland. The main Boluminski Highway in the province</p>

Namatanai Urban Local Level Government*	29,787*	9	1	connects Namatanai to Kavieng town. Judith Tinai is the Namatanai Urban LLG Fisheries Coordinator; the coordinator applied for grants to support a fish processing plant in Namatanai, yet to date, this has not been successful. An inland tilapia aquaculture facility was developed in the urban LLG. The main custom in the region practices the Kabai tradition. Rock shelter remains, close to modern Namatanai town, indicate that the region was inhabited some 30,000 years ago. During the colonial period, Namatanai was an important German trading station. Today, Namatanai is considered a transit town. There are some waterfalls and World War II relics in the area.
Matalai Rural Local Level Government *	29,787*	62	0	There are no current LLG fisheries coordinators in Matalai LLG. Small boats that travel across the St. Georges Channel, between New Ireland Province and the Duke of York Islands and Kokopo in East New Britain Province, depart from the coastal village of Rasirik on the west coast of Matalai LLG. Oil palm, cocoa and coconuts are key cash crops in the region. Traditional customs, linked to the cultural beliefs and traditions of East New Britain Province, remain strong, including the use of shell money and <i>tumbuans</i> at traditional ceremonies and events. Crocodile attacks are a local natural hazard.
Sentral Niu Ailan Local Level Government	29.932	85	1	The central section of the new Ireland landmass and adjacent Islands in the Tabar Island group that lie to the north in the Pacific Ocean. The Tabar Islands include volcanic Simberi Island, where the Simberi Oxide Gold Project, an open-pit gold and silver mine, is located; the mine started production in 2008 and in 2015 produced 5,450 pounds of gold. The LLG supports inland aquaculture ponds and a small fish processing plant. In the centre of the LLG mainland is the Lelet Plateau, which reaches 1,200m above sea level; vegetables are grown on the plateau, which are sold at local markets. The main town in the LLG is Konos, where there is a health centre and police station. The art and custom of shark calling is practiced in Kontu and adjacent communities on the west coast of Sentral Niu Ailan LLG; the practice requires communicating with ancestral spirits, which residents believe are embodied within sharks, and then capturing a shark for consumption. A Shark Calling Festival usually occurs each year in the region. There are several carvers in the region that carve traditional Malagan wooden masks, which are part of the local custom. A number of large and mostly unexplored caves extend through the limestone terrain. Sentral Niu Ailan LLG has a total of 22 wards.

Konoagil Local Level Government	13,132	61	0	The south-eastern region of mainland New Ireland. Most of the human population is located along the coastline of Konoagil LLG; the mountainous interior is sparsely populated. Many rare orchids, frogs and other species are found in upland areas. Several large rivers flow through Konoagil, including the Kamdara, Nimaj, Kait and Weiten rivers, which drain through the coastal regions of the LLG. Research, education and awareness was conducted on critically endangered Beck's petrel seabirds in 2018 and 2020 in Siar and Silur Plantation communities on the south-eastern region of mainland New Ireland. The region is the birthplace of the <i>tumbuan</i> culture, which is practiced in Namatanai District and East New Britain Province. The most southerly point of mainland New Ireland is St. Georges Cape.
Tanir Local Level Government	12,466	37	1†	Comprises the small eastern-most islands and atolls of New Ireland Province, which border the Autonomous Region of Bougainville to the east and south of the LLG. The region includes the Tanga and Feni island groups. The Feni Islands form the most-easterly point of the Bismarck Archipelago, which includes New Ireland and New Britain. There are two main languages spoken in the region: the Niwer Mil language spoken on the Tanga Islands, and the Warwar Feni language spoken on the Feni Islands. The LLG has 14 wards.
Nimamar Local Level Government	25,608	45	1	A group of volcanic islands that lie roughly 50 km north of Namatanai town. The major island in the group is Lihir Island, where the Lihir Gold Mine is located. The second largest gold deposits on earth are found in the region. Lihir Gold Mine was merged with Newcrest Mining in 2010; the merger made Newcrest Mining the fifth largest gold producer on earth, producing 2.8 million ounces of gold in 2009. Newcrest Mining has environmental policies and conducts ecological monitoring in the region. Inland tilapia aquaculture ponds have been established in the LLG. The Lihir language is most commonly spoken in the region, as well as the Niwer Mil, Kuanua and Mandara languages. The majority of the local population are followers of the Roman Catholic Church. There are 16 wards in the LLG.

* The last census was taken in 2011, during which time Namatanai Urban and Matalai were joined as one Local Level Government jurisdiction, called Namatanai Rural. In the late-2010s, Namatanai town broke away from Namatanai Rural forming both Namatanai Urban and Matalai Local Level Governments. No reliable population data exists for each new jurisdiction (the next census is scheduled for late-2020 or early 2021). As such, the population data for both Namatanai Urban and Matalai jurisdictions (formally Namatanai Rural) has been provided.

† The coordinator at Tanir Local Level Government jurisdiction is both the Department of Provincial Industries coordinator and the LLG Fisheries Coordinator.

Current number of communities known to be practicing some form of coastal fisheries management before the project, including indicators

A number of communities in New Ireland Province are known to be practicing some form of coastal or marine management at the community level. This may include the implementation of marine spatial management measures, including the implementation of LMMAs, as well as taking part in marine outreach and education activities, or engaging in eco-tourism ventures. Table 7 outlines some of the communities in the province that have engaged in marine or coastal management within each community's customary waters.

One of the activities for the project is to develop a database for marine management resource needs and active marine management within the Provincial fisheries Office. The database will also include the outputs from community consultations that were coordinated by WCS, and which took place in 168 communities in Lovongai and Tikana LLGs in Kavieng District, New Ireland Province, in 2017 under a Department of State grant.

Support provided by non-state actors

To date, WCS has supported four Technical Working Group meetings in Kavieng, New Ireland Province. The Technical Working Group includes representatives from the NFA, CEPA, New Ireland Provincial Government, NFC, Provincial Fisheries Office, Ailan Awareness Inc., mining companies, the tourism sector, law and order, and other stakeholders. The Technical Working Group's aim is to form consensus on decisions required for steering the development of two marine protected areas that are being established in New Ireland Province, as well as to oversee other marine management initiatives in the region. WCS has also organised meetings for LLG leaders in Lovongai and Murat LLGs, as well as meetings for the private sector and church groups, in order to arrange cross-sectoral communication and coordination regarding marine management issues in the province. In August 2020, WCS and Ailan Awareness Inc. arranged meetings for leaders in south-eastern Lovongai LLG to help resolve on-going land disputes that have led to a number of revenge killings in the area.

WCS has been actively involved in a range of activities to support community-based fisheries management in New Ireland Province, which include the following:

- Developing and strengthening community-based fisheries management plans in 13 communities, with specific focus on five key fisheries of interest, indicated by each community.
- Establishing community-elected Marine Management Committees in 11 LMMAs in Kavieng District.
- Conducting extensive community consultations on mechanisms to formalise community-driven marine management rules and penalties, through conservation deeds (a form of contract law) for LMMAs in 11 communities.
- Providing legal training to LLG leaders, village court officials and village court magistrates on conservation deeds and LLG laws.
- Deploying subsurface fish aggregating devices (FADs) in 11 LMMAs, accompanied by four waves of fisheries catch-and-effort monitoring for catch-per-unit-effort (CPUE) analysis before and after FAD deployment in 13 communities.

Table 7: Details of marine management measures and other forms of coastal and marine initiatives employed by coastal communities in New Ireland Province. The communities have been arranged by Local Level Government (LLG) jurisdictions.

LLG jurisdiction	Community	Marine management measures and other details
Kavieng Urban LLG	Nusa	Island retreat with strong eco-awareness campaign. Links with Scuba Ventures, a scuba diving provider.
	Nago	Scientific research facility for fisheries and aquaculture science. Sea cucumber ranching. Traditional jewellery production for community women. Linked with the National Fisheries College.
Murat LLG	Lolieng	Turtle conservation management plan developed and implemented. Monitoring of sea grass and algae. Community engagement. Established Lolieng Sustainable Programme community based organisation.
Lovongai LLG	Ungalabu	Fisheries management plans developed by communities, and a locally managed marine area established among Ungalabu, Sosson and Kavitongong communities, which includes a rotational harvesting system for giant clams. Fisheries and socioeconomic monitoring. Education and outreach.
	Sosson	Fisheries management plans developed by communities, and a locally managed marine area established among Ungalabu, Sosson and Kavitongong communities, which includes a rotational harvesting system for giant clams. Fisheries and socioeconomic monitoring. Education and outreach.
	Kavitongong	Fisheries management plans developed by communities, and a locally managed marine area established among Ungalabu, Sosson and Kavitongong communities, which includes a rotational harvesting system for giant clams. Fisheries and socioeconomic monitoring. Education and outreach.
	Tsoilik	Fisheries management plan developed by the community, and locally managed marine area established (to be enforced with conservation deeds). Education, awareness and community engagement. Benthic, fisheries and socioeconomic monitoring.
	Mamion	Fisheries management plan developed by the community, and locally managed marine area established. Education, awareness and community engagement. Benthic, fisheries and socioeconomic monitoring.
	Kulibang	Fisheries management plan developed by the community, and locally managed marine area established. Education, awareness and community engagement. Fisheries and socioeconomic monitoring.
	Ungakum	Fisheries management plan developed by the community, and locally managed marine area established. Education, awareness and community engagement. Benthic, fisheries and socioeconomic monitoring.
	Kavulik	Fisheries management plan developed by the community, and locally managed marine area established. Education, awareness and community engagement. Benthic, fisheries and socioeconomic monitoring.
	Patitab	Education and awareness. Coral reef studies. Marine management areas. Fisheries management plan developed by Ailan Awareness. Inc.

Lovongai LLG	Metermarn	Education and awareness. Coral reef studies. Marine management areas. Fisheries management plan developed by Ailan Awareness. Inc. Restrictions on derris root fishing.
	Baikep	Education and awareness. Coral reef studies. Marine management areas. Fisheries management plan developed by Ailan Awareness. Inc.
Tikana LLG	Tugalop	Fisheries management plan developed by the community, and locally managed marine area established. Education, awareness and community engagement. Fisheries and socioeconomic monitoring.
	Bangatan	Fisheries management plan developed by the community, and a locally managed marine area established. Education, awareness and community engagement. Fisheries and socioeconomic monitoring.
	Nonovaul	The community was originally linked with Ailan Awareness Inc. Developed a no-take zone, which is now considered a model example for other communities. Fisheries management plan developed by the community, and a locally managed marine area established. Education, awareness and community engagement. Benthic, fisheries and socioeconomic monitoring.
	Salapiu	Fisheries management plan developed by the community, and a locally managed marine area established. Education, awareness and community engagement. Fisheries and socioeconomic monitoring.
	Limanak	Fisheries management plan developed by the community, and a locally managed marine area established. Education, awareness and community engagement. Fisheries and socioeconomic monitoring.
	Panachais	Education and awareness. Marine management areas. Fisheries management plan by Ailan Awareness. Inc.
	Panamako	Education and awareness. Marine management areas. Fisheries management plan by Ailan Awareness. Inc.
	Lisenung	Island retreat with eco-awareness strategy. Supports a hawksbill turtle nesting site.
Sentral Niu Airlan LLG	Kasalok	Location of the Ailan Awareness Inc. Solwarra Skul (Saltwater School), which provides a venue for reviving traditional marine management approaches.
	Laribina	Home to Kathy Hiob's Freshwater Eels. Pacific eels, migrating from the Tasman Sea to streams and creeks in the tropics, seek refuge in the local river system, which has since become a tourism site.
	Kontu	One of the last few sites of shark calling in the South Pacific.
Matalia LLG	Konos	Marine environmental awareness, outreach and education. Conducted by Ailan Awareness Inc.
	Bulu	Marine environmental awareness, outreach and education. Conducted by Ailan Awareness Inc.
Namatanai Urban LLG	Samo	Education and awareness. Coral reef studies. Marine management areas. Fisheries management plan developed by Ailan Awareness Inc. Customary area closures initiated by <i>tumbuan</i> customary practices.
Konoagil LLG	Namatanai	Marine environmental awareness, outreach and education. Conducted by Ailan Awareness Inc. Location of tilapia fish ponds.
	Silur Plantation	Research conducted on the critically endangered Beck's petrel seabirds in 2018 and 2020; the birds are known to only inhabit the coastal region of Konoagil LLG.

- Arranging a participatory gillnet exchange programme in 13 communities, allowing fishers to exchange small-meshed gillnets for less destructive larger-meshed nets.
- Conducting extensive marine conservation awareness, education and outreach to over 180 communities in Kavieng District, focused on marine ecology, threats to marine habitats and fisheries, marine management measures, policy options, and shark and ray awareness (focused on endangered sawfish and rhino rays).
- Conducting broad scale consultations on the establishment of two marine protected areas in over 80 communities in Lovongai LLG and 20 communities in Murat LLG, in order to gain free, prior and informed consent (FPIC) and consensus on management rules and penalties that will be enforced with LLG laws (this required communities to assess threats local residents perceived to be detrimental to local marine resources through magnitude and frequency risk matrices).
- Developing livelihoods work for village residents, including sea cucumber post-harvest handling and processing in 13 communities, mud crab harvesting and handling in four communities (aimed at female fisheries), and establishing small-scale trial seaweed farms in two communities.

Ailan Awareness Inc., founded by John Aini, established a Solwarra Skul (Saltwater School) in Kaselock, a community just outside Kavieng town, and has been actively involved with community-based fisheries management and marine management since 1993. John Aini developed and submitted an LLG law in 2014, entitled the Lovongai Marine Environment Management Bill; in July 2019, the bill was passed as the Lovongai Marine Environment Management Act (2019), which includes fisheries-based marine management rules for the communities of Lovongai LLG. Ailan Awareness Inc. are advocates of reviving traditional fisheries management measures at the community-level, and have been involved in community-champion exchange visits across New Ireland Province. Ailan Awareness Inc. also helped establish some of the first LMMAs in New Ireland Province, including a no-take zone in Nonovaul community in the Tigak Islands, Tikana LLG, which is now considered a model example for fisheries management in the region. Ailan Awareness Inc. has also worked on mangrove restoration and fisheries monitoring projects.

The Global Green Growth Initiative (GGGI) works with governmental bodies to help form connections with other stakeholders and communities in order to build community resilience in agriculture, forestry, fisheries, the environment, and climate change. GGGI can provide funding, known as Green Climate Funds, to support coordination efforts between stakeholders and communities: For New Ireland Province, there was an approximate budget of US\$ 4 million for the three-year term that GGGI will be based in the province. Currently, GGGI is working with the Economic Sector of the New Ireland Provincial Government, as well as the Provincial Fisheries Office (to establish freshwater aquaculture systems), the Department of Primary Industries, the West Coast Development Association, the Adventist Development and Relief Agency, the Wildlife Conservation Society, and local fish and seafood buyers.

GGGI's main objectives are: (i) to conduct scoping surveys in the province; (ii) to assist the provincial government with climate change resilience approaches; (iii) to improve community livelihood development and options; (iv) to promote sustainable economic development; (v) to increase environmental awareness and social inclusion; and (vi) to provide a platform for the provincial government to take on the initiatives following the three-year timeframe that GGGI has in New Ireland Province. To date, GGGI has been working with the Department of Health to establish solar powered

energy sources for provincial health care centres, the Department of Primary Industries to install solar powered freezers for coastal fisheries, and reforestation projects across New Ireland Province.

In August 2020, Arthur Jones, Managing Director of Pamex Seafood Products, signed a joint-venture agreement with the business arm of the New Ireland Provincial Government (known as the New Ireland Development Corporation). Pamex Seafood Products now has the lease for the seafood refrigerating and processing plant at the Fisheries Wharf in Kavieng town. Pamex Seafood Products aims to reinvigorate New Ireland's Seafood Joint Venture. Jones expressed a keen interest in the sustainable management and harvesting of finfish, lobsters, crabs and sea cucumbers, and spent time in the villages of Lovongai and the Tigak Islands to understand more about local seafood supply chains. Pamex Seafood Products is keen to obtain Marine Stewardship Council certification, and thus welcomed the marine conservation and management measures being implemented in Lovongai LLG and the Tigak Islands by WCS.

Nusa Island Retreat has a strong ethic for environmentalism and sustainability and is keen to attract ecotourism. Lisenung Resort and Clem's Place are also keen for sustainability, environmentalism and ecotourism. The Kavieng Hotel reported that they aim to buy seafood products from sustainable sources, and that they refrained from purchasing female crabs or lobsters that are carrying eggs. Scuba Ventures, a local scuba diving service provider, provides scuba diving trips for visitors and tourists, which can include trips to the Tigak Islands where LMMAs are located. Other hotels and lodges in Kavieng, including Malagan Lodge, Noxies Place and Kavieng Niu Lodge, purchase seafood from community fishers.

Existing ways for communities to share information on resource management issues

Currently there are few means for communities to share information on marine resource management issues. Usually, such information is shared through word-of-mouth. However, the island community of Nonovaul, in the Tigak Islands of Tikana LLG, Kavieng District, established a marine no-take zone in the 2000s, with the support from Ailan Awareness Inc. Since establishment, local fishers have noticed an increase in fish numbers and diversity within the no-take zone, and this information has travelled to other communities who visit Nonovaul to learn more. The LLG Fisheries Coordinators often visit communities to conduct verbal awareness concerning community-based fisheries management.

John Aini, the founder of Ailan Awareness Inc. and the Solwarra Skul, is an advocate of traditional marine management methods, such as *tambu* areas and *Vala*, and since 1993 has worked with communities in New Ireland Province to provide information, training and encouragement for the reviving of customs that concern environmental management. Ailan Awareness Inc. collaborated with Eco-Custodian Advocates, based in Milne Bay Province, to produce a video entitled *Vala North*, which showcases examples of the use of *Vala* (a Y-shaped branch from a tree, which has local traditional significance, inserted into the seabed to demarcate traditional marine spatial management areas), a tradition in New Ireland Province that has been fading in many societies. Aini has produced other videos for dissemination to communities to show marine management methods, and conducted community champion exchange visits.

WCS, which works in collaboration with Ailan Awareness Inc., also arranged community site visits to showcase examples of community-based fisheries and resource management to other communities, and

produced education, outreach and engagement materials covering marine science, threats, management and policy topics.

Govan (2018) provided examples of cost-effective communication strategies that could be implemented in New Ireland Province, which could help disseminate community-based fisheries management methods to villagers and fishers across the region. Such approaches include:

- Disseminating messages through district, LLG and ward-level staff and structures, via handouts and information booklets
- Using opportunities provided by community and ward-level associations and cooperatives
- Delivering regular radio broadcasts on the National Broadcasting Channel radio station
- Publishing articles in local and national newsletters and newspapers, and conducting interviews with journalist
- Conducting multi-village gatherings, such as at markets, sport events and church congregations
- Providing outreach through youth or women's groups, and the Department of Community Development
- Providing shared transport with representatives from other sectors
- Providing outreach and awareness to local health clinics and schools
- Producing information posters and billboards
- Conducting community champion exchange visits to showcase best practices and lessons learned
- Producing short videos, focused on community-fisheries management measures
- Submitting social media posts on relevant internet sites

Community champions on resource management issues

A number of communities have implemented marine management areas within their customary waters, either independently or with assistance from non-governmental organisations. John Aini, founder of Ailan Awareness Inc., has been a key player in showcasing community champions and arranging site exchange visits, enabling community champions to share information. A list of community champions in New Ireland Province, and the management initiatives they are responsible for, has been presented in Table 8.

Experience of formal and informal consultations between communities and government on ocean or coastal fisheries policy matters

In 2013, WCS began extensive community consultations with five communities in the Tigak Islands in western Tikana LLG (notably Salapiu, Limanak, Nonovaul, Bangatan and Tugalop communities) and five communities in the Tsoi Islands (Tsoilik, Mamion, Kulibang, Ungakum and Kavulik communities, all located in Lovongai LLG). This work involved establishing community-based fisheries management plans, which were developed by village residents. In 2017, WCS extended the development of CBFM plans to a further three communities in north-west Lovongai LLG: Ungalabu, Sosson and Kavitongong. WCS PNG has a strong Community Engagement Protocol, which is applied across the whole PNG programme, and which involves rigorous free, prior and informed consent (FPIC) approaches. In 2019, grievance mechanisms were also in place in all aforementioned 13 communities in both Lovongai LLG and the Tigak Islands, to enable communities to report any grievances that may have occurred due to WCS activities or engagement.

Table 8: Community champion marine managers in New Ireland Province, and their roles and responsibilities in initiating marine management methods in their community's customary waters. The community name and Local Level Government jurisdictions have been included.

Community champion name	Community name	Jurisdiction	Roles and responsibilities regarding marine management initiatives
Michael Piskaut	Latani	Tikana LLG	Revived traditional management methods in community customary waters.
Lambo Cornelius	Pananru	Tikana LLG	Revived traditional management methods in community customary waters, including traditional marine management areas.
Dinia Olive	Nonovaul	Tikana LLG	Established a fisheries no-take zone in 2005.
Timothy Tande	Siwaivat	Tikana LLG	Worked on mangrove rehabilitation and restoration projects.
John Aini	Lovongai Village	Lovongai LLG	Revived traditional marine and coastal management methods, and education and awareness.
Keni Tawan	Nusantaumatai	Lovongai LLG	Revived traditional marine management methods and featured in the <i>Vala North</i> video.
Annisah Sapul	Sosson	Lovongai LLG	Conducted community engagement, education, awareness and outreach. Project management.

In 2017, WCS conducted extensive community outreach consultations to 168 communities in Lovongai and Tikana LLGs in New Ireland Province. The consultations assessed community threats to marine resources, which were digitised onto *ArcGIS* maps and which have since been repatriated to communities and other stakeholders. The outcomes of these consultations helped steer the selection of the locations of the two community-driven marine protected areas (MPAs) that are currently being established in the province. The two proposed MPAs both have a strong community-based fisheries management focus, with rules and penalties selected by community residents. The outcomes from the community consultations were reported to the meetings of the Technical Working Group.

WCS has been involved in a range of consultations with communities and government agencies, which concern community-based fisheries management in New Ireland Province. Since 2018, WCS has arranged annual or biannual Technical Working Group meetings, which comprise representatives from the national, provincial and local level governments, NGOs, the private sector and other key stakeholders; the meetings aim to steer the development of two marine protected areas in Kavieng District, including community-selected fisheries management rules and penalties. During the last Technical Working Group meeting in September 2019, terms of reference for the Technical Working Group members were developed and agreed upon, which included methods for gaining consensus on marine management decisions that take place in the province. The next Technical Working Group meeting will take place in October 2020.

In late 2018, WCS began a series of meetings and training workshops for other stakeholders in New Ireland Province, which included private sector meetings, with representatives from mining companies, plantation companies and other extractive primary industries, as well as seafood buyers and processors, the tourism and hospitality sector, church group leaders from the various Christian denominations that are present in the province, and village court magistrates and community-police personnel. These meetings focused on marine ecology, marine threats, and management approaches, and outlined the fisheries management initiatives that were taking place in the province.

Since 2019, WCS arranged community consultations for the development of the two marine protected areas in Lovongai and Murat LLGs, respectfully. The consultations are ongoing and have been conducted through the free, prior and informed consent (FPIC) process. The consultations consist of three phases:

- PHASE I: Community outreach and engagement: Comprises an educational component focused on marine ecology, threats and management, and a threat analysis. Venn diagrams are used to determine relevant community stakeholders, and how important the different community stakeholders are to each community.
- PHASE II: Risk impact assessments, based on the outcomes from the threat analysis in Phase I, allow communities to assess the magnitude and frequency of perceived threats to marine resources, leading to impact ratings; the threats with the highest impact ratings – pooled from all the communities in the LLG – will be used for the marine protected area management rules. Rules and penalties for non-compliance will be provided by village residents. The outer-most external boundaries of the customary waters of each community are also determined, providing the outermost boundary of the two marine protected areas.
- PHASE III: Data repatriation and information dissemination concerning the outcomes of the Phase II consultations will be provided back to the communities, and community consensus on the rules and penalties, and the boundary of the marine protected areas, will be obtained.

The outcomes from the consultations will be reported to the Technical Working Group meetings. At the time of writing, Phase I was completed in most Lovongai and Murat LLG communities, and Phase II had been completed in 30 communities in Lovongai LLG. Phase II will take place in all Murat LLG communities in September and early October 2020, and at least 20 more communities will complete Phase II in September and October 2020 in Lovongai LLG. It is anticipated that all of Phase II will be completed in both LLGs by the end of 2020.

Grace Dom, a legal advisor contracted by WCS, provided a two-day training workshop to 18 of the 19 ward members of Lovongai LLG, along with other stakeholders in the region, in February 2020. The workshop concerned the requirements and advantages and disadvantages of implementing conservation deeds (a form of contract law) to enforce community LMMAs within a community's customary waters. The training also introduced LLG laws (part of the Organic Law, recognised under the PNG Constitution) to the ward members, which will be implemented to formalise the larger marine protected area that will be established in Lovongai LLG in 2022. The LLG law for the Lovongai LLG Marine Protected Area will be based on the Lovongai Marine Environment Management Law, which was developed and submitted by John Aini, from Ailan Awareness Inc., in 2014, and passed as an act in July 2019. The same training workshop also provided an opportunity for the Marine Environmental Management and Conservation Committee (MEMCC) to voice their opinions regarding local marine management in the region. Similar meetings will take place in Murat LLG to establish the Murat LLG MEMCC.

E. INTERVENTION STRATEGY

Eight activities will be executed by WCS during the three year timeframe of the LMMA-PEUMP project. Each activity has been designed to provide direct and indirect support to coastal communities and stakeholders, in order to increase and improve community-based fisheries management approaches in New Ireland Province. The ultimate aim is to increase the spread of coastal fisheries management measures – and means for communication among stakeholders – to at least 80% of the communities in New Ireland Province. Table 9 provides an outline of the eight activities proposed by WCS, and how such activities will provide support for local community-based fisheries management measures in the province, while also disseminating fisheries management information to New Ireland communities and relevant stakeholders.

Table 9: The project activities that will be implemented by the Wildlife Conservation Society during the 2020-2022 timeframe of the SPC-PEUMP project. An outline of how the activities will provide both direct and indirect support to communities in New Ireland Province, and an overview of the information that will be provided to provincial communities and the stakeholders, has been included.

Project activity	Direct and indirect community support	Information provided to communities and stakeholders
ACTIVITY 1.1: Facilitate annual meetings of locally managed marine area practitioners in New Ireland Province.	Facilitate and establish the growth of an LMMA Learning Network for New Ireland Province communities. Education, outreach, awareness and management training materials will be produced and disseminated to communities. The New Ireland Province LMMA Learning Network will be modelled on the Western Province Network for Sustainable Development, which provides knowledge exchange between sites in Western Province, Solomon Islands.	Through a forum for cross-site CBFM knowledge exchange and collaboration, LMMA practitioners in New Ireland Province, including community representatives and representatives from Ailan Awareness Inc., NFA, NFC, CEPA, Eco-Custodian Advocates, the Coral Reef Foundation and the PNG Centre for LMMAs will develop and coordinate network activities and exchange best practice ideas.
ACTIVITY 1.2: Mentor community champions in New Ireland Province to share knowledge through cross-site exchanges.	To identify local community champions of sustainable fisheries management and to demonstrate best practices during cross-site learning exchanges. Frequent cross-site learning exchanges will be arranged, to help deliver key messages from community champions, including visits to a demonstration LMMA for communities interested in marine management. Champions can pass the information they learn to other residents in the province.	Meetings based at the Ailan Awareness Inc. Solwara Skul will promote local level marine management and conservation, and disseminate information about community-based fisheries management. Information will comprise both traditional and modern approaches to marine management. Training will be provided to communities and fisheries officers.
ACTIVITY 1.3: Develop networks for fishers around specific targeted fisheries (notably sea cucumbers and mud crabs) to foster knowledge exchange in New Ireland Province for improved livelihoods and management.	Packages of sea cucumber training materials will be compiled for communities, concerning sea cucumber purchasing and which qualities of sea cucumber processing fetch better sale prices. Training packages will be presented as workshops using a trainer-of-trainer format, so trainers can return to their villages and train community members. An information dissemination network, focused on women to provide best practice training and information on mud crab post-harvest handling and processing, will be established. A forum for bringing together female fishers will be created to share mangrove-associated fisheries conservation, restoration and management initiatives.	Work with individuals involved in sea cucumber harvesting to create a network for information dissemination based on sea cucumber post-harvest processing and handling. Contact information on key individuals working on sea cucumber processing and buying will be collated, concerning interested parties interested in learning post-harvest handling methods. This information will be kept on a database at the New Ireland PFO. WCS will aim to link with The Nature Conservancy to share resources created under the 'Mangoro Market Meri' initiative.

ACTIVITY 1.4: Support community representatives to participate in the New Ireland Technical Working Group for coastal fisheries.	Community voices, thoughts and opinions will be included into the annual or biannual Technical Working Group meetings.	Incorporate representation of community fisheries management networks into the Technical Working Group meetings to ensure community voices are factored into provincial coastal fishery planning and decision-making. The Technical Working Group consists of government, NGO and private sector representatives.
ACTIVITY 2.1: Mentor New Ireland Provincial Fisheries Office staff to develop and implement annual work plans.	Training outcomes from PFO staff will be disseminated to at least 50% of the communities in Lovongai and Tikana LLGs, in the form of outreach. Outreach methods can include training Local Level Government staff, as well as engaging fisheries cooperatives, women groups, church groups and schools, and distributing leaflets and posters, utilising social media and making radio broadcasts on the National Broadcasting Channel.	Training workshops for Provincial Fisheries Office staff will be established, which will include activities that will be incorporated into the Provincial Fisheries Office staff annual work plans. The training will aim to maximise dissemination of best practice information for fisheries management. Two provincial officers will also be mentored, so they are qualified for implementing the annual work plans.
ACTIVITY 2.2: Generate an information database of fisheries management and development needs, and provide training to Provincial Fisheries staff on knowledge management.	During future rounds of marine spatial planning data collection, WCS will enlist the support of the trained Provincial Fisheries Office staff to provide relevant training for communities and to update database records.	Provide capacity building for New Ireland PFO staff in order to house and store information on active community-based fisheries management projects, including contact information, and ongoing community needs for fisheries management support and development. Provide implementable solutions to knowledge management. Assist with collating information on resource use from 168 communities in Kavieng District, during consultations conducted by WCS and LLG fisheries officers in 2017.
ACTIVITY 2.3: Work with New Ireland Provincial Fisheries Office staff to develop a communications strategy for coastal fisheries management.	Mentor Provincial Fisheries Office staff and pass on the information they have obtained through the communications strategy, which can be disseminated to communities during future site visits.	Mentor New Ireland Provincial Fisheries Office staff, and develop a communications strategy based on information and management support needs for the database. Interview private sector actors, including fish and sea cucumber buyers, to assess further information needs. Develop appropriate communication channels to provide information on the database and other information needs, which will be linked to actions in the annual work plans.

ACTIVITY 2.4:

Coordinate meetings between New Ireland Provincial Fisheries Office staff and LLG fisheries coordination officers to ensure alignment of the Provincial Fisheries Office and LLG work plans.

Provincial Fisheries Office staff and LLG fisheries coordination officers will disseminate information from communication activities to communities in New Ireland Province.

Regular meetings and communication will be arranged between Provincial Fisheries Office staff and LLG fisheries officers in New Ireland Province, regarding the coordination of work plans, focused on mainstreaming the communication process, enabling ongoing alignment of work plans following project completion.

F. INDICATORS TO BE TRACKED FOR THE PROJECT

The following indicators, listed by the Pacific Community (SPC), will be tracked during the timeframe of the New Ireland Province project:

Community coverage

- 80% of communities reached by management information and other types of support through government, NGOs, or other communities provided by the project

Management uptake by communities

- 80% of communities reached by the project activities that have made informed decisions (such as setting up or strengthening rules, or taken action or more elaborate management if needed) in Lovongai and Murat Local Level Government (LLG) jurisdictions and the Tigak Islands, located in Tikana LLG jurisdiction
- 20% of communities that have not taken action or maintained previous action, based on informed consideration in Lovongai and Murat Local Level Government (LLG) jurisdictions and the Tigak Islands, located in Tikana LLG jurisdiction

Change in government support

- 10 Provincial Fisheries Office staff dedicated to community-based fisheries management
- 13 communities visited by government staff
- 5 community champions trained
- 2 policies (LLG laws and conservation deeds) of implementation to support CBFM, as well as 11 fisheries management plans and 2 work plans or strategies, are in place

Gender and social inclusion

- 15% of men, women and youth reached by the project activities

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