Regional Diagnostic Study on

the Application of Building Codes in the Pacific

Consultant's Report

PRIF Pacific Region Infrastructure Facility

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Abbreviations

ADB	Asian Development Bank
PNG	Papua New Guinea
PRIF	Pacific Regional Infrastructure Facility

Preface

The increased frequency of natural disasters experienced by Pacific island countries since the turn of the millennium highlights the role of building codes in saving lives and structures. The destruction of infrastructure by natural events exacerbates economic and development challenges and affects people's lives through loss of shelter and access to essential services. One of the most effective ways to safeguard communities against natural disasters is to adopt and enforce appropriate building codes.

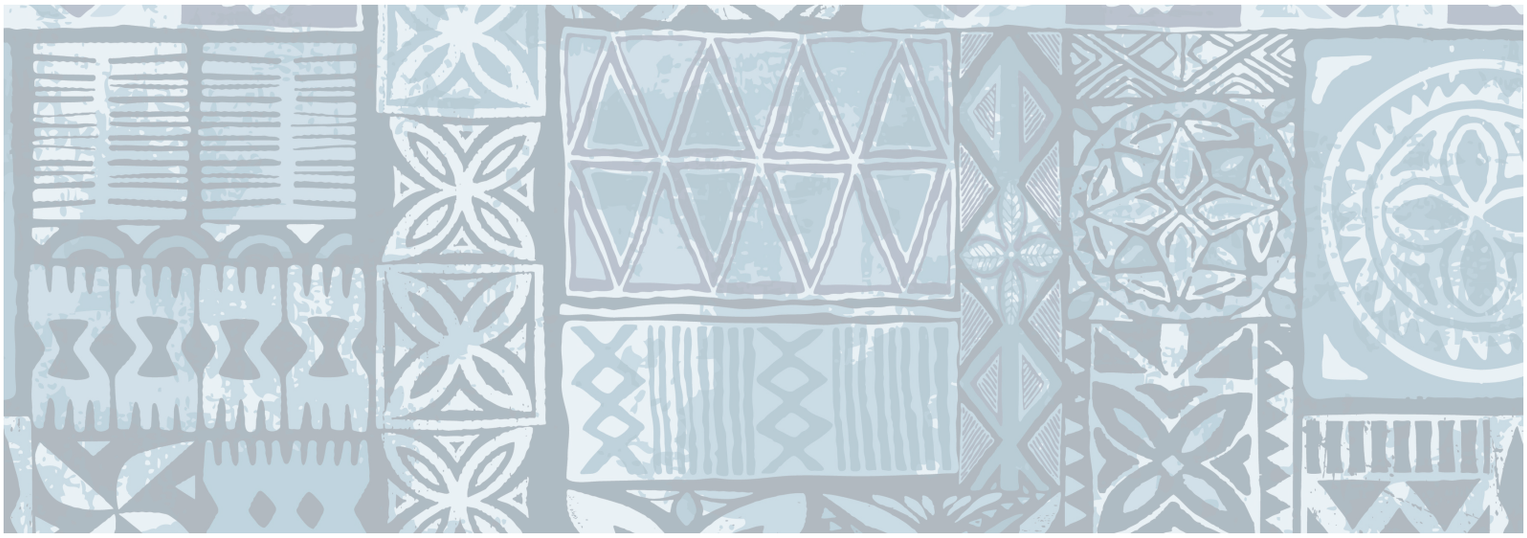
Advanced building codes recognize climate realities. They adapt building requirements to prepare for future disasters and foster resilient Pacific communities. Building codes provide minimum standards for safety, health, and general welfare. This includes standards for structural integrity; mechanical integrity, such as sanitation, water supply, light, and ventilation; means of egress; fire prevention and control; and energy conservation. Many Pacific island countries receive assistance to update their building codes, allowing them to raise their construction standards to withstand more severe natural events.

This Regional Diagnostic Study on the Application of Building Codes in the Pacific examines the national building codes of 13 Pacific island countries and assesses each country's capacity to apply their codes. As a result, the report recommends regional and national responses to strengthen building codes and standards. It also provides valuable information to guide future initiatives in building code updates, administration, management, compliance, and enforcement for Pacific island countries to ensure shelter and access to basic services.

In addition, the report describes the experience of Fiji, Solomon Islands, and Vanuatu in post-cyclone reconstruction. Through participatory workshops, the report team canvassed the views of communities, government ministries, architects and engineers, and local construction consultants and contractors. The detailed country reports are provided separately.

The report was prepared by Rhys Gwilliam, an experienced architect and construction management practitioner. The author completed this guidance document with the support of the governments of the 13 participating Pacific island countries as well as using input from construction practitioners, representatives of the private sector, and local communities. Mr Gwilliam is grateful to the partners of the Pacific Region Infrastructure Facility and the governments of Fiji, Solomon Islands, and Vanuatu for their guidance and cooperation during the in-country consultations.

This publication is intended to guide government officials, construction management professionals, property developers and investors, community groups, and other contributing parties in the formulation of new and more climate-responsive building codes and related policies throughout the Pacific.



1. Executive Summary

The Regional Diagnostic Study on the Application of Building Codes in the Pacific:

- investigates the capacity of Pacific countries to apply their national building codes, and
- guides future assistance initiatives related to national building code updates, administration, management, and compliance enforcement that could be provided by Pacific Regional Infrastructure Facility (PRIF) development partners.

In-country workshops were held in the three largest Pacific Island countries: Fiji, Solomon Islands, and Vanuatu, and questionnaires distributed to the remaining 10 PRIF Pacific member countries. Over 160 construction practitioners in the 13 countries were consulted. The workshops, completed questionnaires, and associated consultations identified five key themes that determine the quality of national building code application outcomes:

i. adequacy of building codes,
ii. administration and compliance,
iii. training and capacity building,
iv. awareness and promotion, and
v. building standards.

An analysis of the key themes identified enabling and constraining factors that informed the generic action plan of short-term and long-term actions and activities in the following areas:

- legislation and governance,
- building regulations and building codes,
- building standards,
- administration, management, and compliance,
- institutionalization, and
- awareness and promotion.

The generic action plan can be tailored by individual Pacific countries to update their national building codes and improve their administration, management, and compliance enforcement. If properly and diligently executed, the national building code action plan will:

- improve construction quality,
- help mandate local and imported building supply standards,
- reduce building operational and maintenance costs,
- increase building life span,
- address climate change concerns, and
- help raise construction standards to withstand more severe natural events.

To help Pacific countries implement their national building code action plans, potential areas of support that PRIF development partners can consider regionally and nationally are identified.

Regionally, it is proposed that PRIF development partners support a regional organization to co-ordinate Pacific countries' national building code activities, including establishment of a “National Building Code Regional Coordination Office” staffed by a national building code regional support coordinator. The National Building Code Regional Office could provide Pacific countries with national building code support in the areas of:

- technical and legal assistance,
- building standards,
- promotion and awareness strategies,
- technical training and capacity building,
- building insurance and banking, and
- incorporation of national building codes into technical training by local educational institutions.

Nationally, a suite of interventions is proposed for consideration by PRIF development partners that would complement regional assistance. This could include preparing terms of reference and assistance to individual Pacific countries with recruiting and funding of:

- a national building code coordinator,
- a legal expert to review existing building control legislation and building material product standards,
- a building consulting firm to develop new national building codes, or review existing national building codes,
- a human resource consultant to undertake a gap analysis of the Pacific countries’ current building control regulatory human resource environments.

It could also include providing technical and funding support for:

- delivery of national building code capacity building and training programs,
- delivery of awareness programs to promote the national building codes and
- operation of materials testing laboratories.

Based on the potential areas of PRIF support, a 5-year costed program (road map) has been developed. The Road Map demonstrates how a PRIF partner and/or partners could support a national building code regional office to assist with national building code updates, administration, management, and compliance enforcement. The estimated cost to implement the Road Map is $5,256,300.

2. Introduction

2.1 Background

In recent years, considerable studies have been conducted to find ways to improve the resilience to disasters of infrastructure in the Pacific, a region that has become increasingly prone to extreme weather events. Studies have targeted:

- disaster response,
- post disaster assessment and recovery frameworks, and
- strengthening capacity for recovery planning and monitoring.

Some Pacific countries have received assistance to update their building codes and to raise construction standards to withstand more severe natural events.

However, many Pacific countries do not have building codes or have unlegislated building codes which cannot be enforced or have outdated building codes. Further, a strong perception remains among construction practitioners in the region that both the old codes and the updated codes and standards are not being administered, managed, or enforced adequately, leading to poor quality and non-resilient infrastructure. Apart from limited funds, problems range from expensive construction materials to the lack of skilled human resources needed for quality control and compliance enforcement.

The PRIF, through the Asian Development Bank, contracted a senior building expert—Rhys Gwilliam—to undertake the "Regional Diagnostic Study on the Application of Building Codes in the Pacific". The study was undertaken between November 2018 and October 2019. The study aims to:

- investigate the capacity of Pacific countries to apply their national building codes, and
- guide future assistance initiatives related to national building code updates, administration, management, and compliance enforcement that PRIF development partners could provide.

2.2 Consultation and Methodology

The status of the national building codes, building construction specifications and standards, and national building code administration, management, and compliance across 13 Pacific countries—Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Nauru, Niue, Palau, Republic of the Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu—was gathered and analyzed.

In Fiji, Vanuatu, and Solomon Islands, the senior building expert undertook in-country missions comprising one-on-one interviews and participatory workshops with key players in the construction industry. These key players included builders, private and public sector construction practitioners, and government regulators. The consultations aimed to:

- identify the main constraints that prevent the application of the national building code requirements;
- identify gaps in the capacity of construction practitioners and government agencies to apply and promote the national building codes;
- explore actions and activities that will improve the application of national building codes;

- recommend future national building code updates and strengthening of administration, management, and compliance procedures appropriate to the capacity of the country to apply them;
- propose mechanisms to better align national building code application procedures with other initiatives to improve resilience, including integration with energy efficiency, emergency guidelines, and other climate adaptation initiatives, and
- identify areas of support needed by Pacific countries to guide future assistance programs supported by PRIF development partners.

The outcomes of these missions are recorded in the three country reports, which can be accessed from the following hyperlinks:

Fiji: https://www.theprif.org/document/fiji/building-codes-and-standards/building-codes-guidance-fiji-case-study
Solomon Islands: https://www.theprif.org/document/solomon-islands/building-codes-and-standards/building-codes-guidance-solomon-islands-case
Vanuatu: https://www.theprif.org/document/vanuatu/building-codes-and-standards/building-codes-guidance-vanuatu-case-study

For the remaining 10 Pacific countries, questionnaires, based on the outcomes of the Fiji/Vanuatu/Solomon Islands missions, were prepared. In consultation with PRIF development partners, consultants managing development projects in each of the Pacific countries, and the Pacific country governments, a construction practitioner in the appropriate government ministry was identified as the Pacific countries representative. The senior building expert distributed the questionnaire to the Pacific country representative and associates to gather views on building code application, administration, management, and compliance. After consultation by email and telephone, 5 of 10 Pacific countries returned the questionnaires. Five (Niue, Cook Islands, Palau, Tonga, and Tuvalu) did not return the questionnaires but responded with emails.

Over 160 Pacific country construction practitioners, about 40 in each of the 3 case study countries and 40 in the other 10 Pacific countries, participated in the consultation.

2.3 Guidance Document

This Guidance Document is based on the data collected from:

- a desk study review of Pacific countries national building codes and relevant reports;
- country reports from Fiji, Solomon Islands, and Vanuatu; and
- completed questionnaires and email and telephone consultations with construction practitioners from other Pacific countries.

The desk study review of Pacific countries' national building codes, legislation, building guidelines, handbooks, and manuals and relevant national building code reports helped set the parameters for consultations and inform the support recommended for consideration by PRIF development partners. A bibliography of these documents is included in **Annex 2**.

The Guidance Document:

- summarizes in a matrix the construction regulatory context for each of the 13 Pacific countries;
- identifies the key themes resulting from the consultations;
- identifies enabling and constraining factors and highlights the challenges and issues Pacific countries governments face in implementing national building codes;

- proposes actions and activities that take account of those challenges for future national building code updating, application, administration, management, and compliance;
- proposes a National Building Code Generic Action Plan that Pacific countries can use as a basis for developing their own national action plans; and
- identifies potential areas of national and regional support for consideration by PRIF development agencies, regional organizations, universities, private sector, and other relevant stakeholders.

2.4 Involvement of Other Pacific Countries

During the study, New Caledonia and Papua New Guinea (PNG) indicated a desire to collaborate in the Pacific island countries' national building code initiative to improve exchanges between New Caledonia and PNG and other Pacific countries. Both countries completed the national building code questionnaires.

New Caledonia is more advanced on building code enforcement than the Pacific countries targeted under this study, in particular with the registration of builders and the involvement of the private sector in monitoring compliance. The country may thus offer valuable lessons for other Pacific countries. New Caledonia completed the questionnaire reference in Section 2.2. Notably, several Ni-Vanuatu engineering and architectural graduates from New Caledonian technical institutes work in Vanuatu, so the New Caledonian experience may be particularly relevant to Vanuatu.

PNG noted that the national building code initiative is very critical and relevant to PNG. The national building code questionnaire has been completed by the PNG stakeholders and PNG has requested that PRIF review the information contained in the questionnaire and provide feedback for further support and assistance.

Once a national building code regional office has been established, the regional coordinator should formalize cooperation arrangements with Government of New Caledonia, *Direction des Achats du Patrimaine et du Moyens* and Government of PNG *Standards Development Division of the National Institute of Standards and Industrial Technology*. What support and assistance can be provided to New Caledonia and PNG by the National Building Code Regional Office can then be determined.

3. Context

Table 1 documents the status of the building regulations and national building codes for each of the 13 Pacific countries studied. In addition to the status of the national building codes in relation to updates and legislation, the table also identifies:

- construction handbooks and manuals that target local builders and homeowners;
- agency/agencies responsible for administering, managing and enforcing national building code compliance;
- organizations representing building professionals responsible for applying the national building code; and
- teaching institutions where construction technology is taught.

Table 3-1: Status of the building regulations and national building codes for each of the 13 Pacific countries

	Cook Islands	FSM	Fiji	Kiribati	Nauru	Niue	Palau	Marshall Islands	Samoa	Solomon Islands	Tonga	Tuvalu	Vanuatu
Population (Asian Development Bank mobile statistics, 2020)	17,379	104,937	898,760	114,395	11,347	1,624	21,503	53,066	195.125	599,519	107,122	11.097	270.402
Questionnaire received workshop completed	email	Yes	Yes	Yes	Yes	email	email	Yes	Yes	Yes	email	email	Yes
National building code exists (original date)	Yes (1990)	No	Yes (1990)	Yes (2000)	No	Yes (1990)	No	Yes (1987)	Yes (1990)	Yes (1990)	Yes (2001)	Yes (1990)	Yes (1990)
National building code is legislated (date legislated)	Yes	.	Yes (2004)	Yes (2017)	...	Yes (1992)	...	Yes (1987)	Yes (2002)	No	Yes (????)	No	Yes (2017)
Latest building code update (date)	(2018)	...	None	Limited (2010)	...	(2019)	...	(2019)	(2017)	Limited (2016)	(2018)	(2019)	Limited (2000)
Building code update enacted (date)	Before Cabinet	...	...	...	...	Before cabinet	...	Before cabinet	(2019)	...	Before cabinet	Before cabinet	...
Construction manual targeted at local builders exists (name and date)	Home builders manual (HBM) (1990)	None	HBM (1990)	National sanitation guidelines (Draft)	None	Acceptable solutions handbook (2019) HBM	None	None	HBM (1992) 5 no national building code handbooks (2017)	HBM (1990)	Tie down systems (2004)	HBM (1990)	HBM (1990)
Construction handbook targeted at home owners exists (name and date)			Fiji Shelter Handbook 2019	None in regular use				Climate change, disaster and energy handbooks	Residential guidelines (2017)	None in regular use			
Legislation exists to control building materials standards	No	No	1992	No	No	No	No	No	No	No	No	No	No
Agency (s) responsible administering and maintaining the national building code	ICI	...	MOH MOITT	MISE QCIU	...	MOI	BOPW	MWIU	MWTI	MID	Moi	PWD	MOIA MOIPU

Table 3-1 cont.: Status of the building regulations and national building codes for each of the 13 Pacific countries

	Cook Islands	FSM	Fiji	Kiribati	Nauru	Niue	Palau	Marshall Islands	Samoa	Solomon Islands	Tonga	Tuvalu	Vanuatu
Agencies responsible for approving building permits enforcing compliance and issuing completion certificates	ICI	...	MOLAHE (Councils and Provinces)	QCIU	...	MOI	...	MWIU. NBC is not enforced on non-gov bldgs	MWTI	MID, Honiara Council, Provincial Gov.	MOI	PWD	MOIPU Municipal & Local Gov Councils,
Organizations representing building profession		None	CIC, SPEA FAA, FBDA, FIE, FMBA	None	None	None	None	None	IPES SPEA	SIBPEA			None
Technical and vocational Institutes where construction technology is taught		FSM College of Micronesia	FNU, APTC, Trade Colleges	KIT APTC	USP TVET			College of the Marshall Islands	APTC, NUS	SINU, RTC			VIT VRDTCA
Materials testing Labs exist	No	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes

... = not xxxx, FSM = Federated States of Micronesia.

GOVERNMENT: BOPW = Bureau of Public Works, HBM = Home Builders Manual. MWTI = Ministry of Works Transport and Industry, MID = Ministry of Infrastructure and Development, MWIU = Ministry of Works, Infrastructure and Utilities, MISE = Ministry of Infrastructure and Sustainable Energy. MOITT = Ministry of Industry Trade and Tourism, MOLAHE = Ministry of Local Authority, Housing and Environment, MOH = Ministry of Health, QCIU = Quality Control and Inspection Unit, MOIA = Ministry of Internal Affairs, MOIPU = Ministry of Infrastructure and Public Utilities, ICI = Infrastructure Cook Islands, DTCI = Department of Transportation, Communications and Infrastructure, MOI = Ministry of Infrastructure, PWD = Public Works Department.

CONSTRUCTION AND INDUSTRY: CIC= Construction Industry Council, IPES = Institute of Professional Engineers of Samoa, SIBPEA = Solomon Islands Building Professionals and Engineering Association, SPEA = South Pacific Engineers Association, FAA = Fiji Association of Architects, FBDA = Fiji Building Designers Association, FIE = Fiji Institute of Engineers, FMBA = Fiji Master Builders Association.

TEACHING INSTITUTIONS: SINU = Solomon Islands National University, RTC = Rural Training Centre, APTC = Australia Pacific Training Coalition, NUS = National University of Samoa, FNU = Fiji National University, TVET = Technical and Vocational Education Training, USP = University of the South Pacific, KIT = Kiribati Institute of Technology, VIT = Vanuatu Institute of technology, VRDTCA = Vanuatu Rural Development & Training Centre Association

4. Key Themes

The in-country workshops and questionnaires raised key themes which have been used to determine factors that enable and constrain the application of Pacific country national building codes and inform actions and activities to update and improve the technical content, administration, management, and compliance enforcement of the codes.

These key themes can be grouped under five headings:

i. adequacy of building codes
ii. administration and compliance
iii. training and capacity building
iv. awareness and promotion
v. building standards

The role of insurance companies and financial institutions in promoting and adopting national building code compliance as a prerequisite for building loans and insurance was identified as the benchmark of a successfully implemented national building code. Pacific countries construction practitioners and financial institutions rely on certification by approved structural engineers or compliance with Australian, New Zealand, and American building codes.

The issues and comments raised under each of the key themes are summarized in the Guidance - Country Reports.

Figure 4-1: Participatory workshop in Solomon Islands and Vanuatu

Note: Images from national building code participatory workshops in Vanuatu and Solomon Islands February and May 2019. Over 160 Pacific countries construction practitioners participated in the consultation process and provided the senior building expert with the benefit of their views on how a national building code could be updated and better managed, administered and enforced. Actions and activities recommended in this Guidance Document are a direct reflection of the participant's views and are "owned" by the Pacific countries construction practitioners who participated in the study.

5. Enabling and Constraining Factors

The factors enabling and constraining national building codes (and construction specifications and standards) that emerged from an analysis of the key themes summarized in the country reports and questionnaires are highlighted below.

5.1 Legislation and Governance

Enabling factors

- Building control legislation has been enacted for 9 of the 13 Pacific countries surveyed as shown in Table 5.1; 2 Pacific countries are in the final stages of drafting legislation.
- Fiji has enacted the Trade Standards and Quality Control legislation.

Constraining factors

- In some Pacific countries legislation is outdated and does not cover new or updated national building codes.
- In most Pacific countries, building control legislation is not harmonized with related legislation such as environmental and trade practices law.
- In most cases, the governance structure/framework/process within the acts needs to be reviewed and, in some cases, a system of central control, including a national building board, needs to be established.

Table 5-1: Building control legislation by Pacific countries

	Cooks Islands	FSM	Fiji	Kiribati	Nauru	Niue	Palau	Marshall	Samoa	Solomons	Tonga	Tuvalu	Vanuatu
National building code exists	✓	×	✓	✓	×	✓	×	✓	✓	✓	✓	✓	✓
National building code legislated	✓	×	✓	✓	×	✓	×	✓	✓	×	✓	×	✓
National building code recently updated	✓	×	×	×	×	✓	×	✓	✓	×	✓	×	×

FSM = Federated States of Micronesia.
Source: Author provided.

5.2 Building Regulations and National Building Code

Enabling factors

- A national building code exists in 10 of the 13 Pacific countries.
- In 7 of 13 Pacific countries, the national building code is supported by a home builders manual used by some locally based engineering and architectural consultants.
- In 6 of the 13 Pacific countries, the national building code has been significantly reviewed and updated in the past 5 years and in 3 of the Pacific countries a limited review has been completed with minimal updates (mainly updating of Australia and New Zealand building standards).
- Activities in some Pacific countries are ongoing, with consultants preparing complimentary handbooks and manuals to the national building codes, targeting local builders and communities.

Constraining factors

- In 4 of the 13 Pacific countries the national building code is more than 20 years old and has not been reviewed or updated since publication or has had only a limited review.
- Accessing Australian and New Zealand standards referenced in the national building code is difficult and costly.
- 3 Pacific countries have no national building codes.

5.3 Building Standards

Enabling factors

- The national building codes reference Australian and New Zealand building design and building product standards.
- Materials testing facilities are available in 6 of the 13 Pacific countries.
- Fiji has a Trade Standards and Quality Control Act (1992) which legislates the publishing of Fijian standards. Under the act, standards are published as voluntary or mandatory. The Fijian Department of National Trade Measurement and Standards has a memorandum of understanding with Standards Australia, which enables Fiji to use and adopt Australian standards. The department modifies Australian and New Zealand standards as per Fiji's needs.
- Vanuatu has the Vanuatu Bureau of Standards, however, currently the bureau does not monitor building standards.

Constraining factors

- Materials testing facilities available are limited and not well supported.
- In all Pacific countries, except Fiji, there is no legislation on national trade measurement and standards or agency responsible for monitoring standards.
- Outside of the national building code there are no mechanisms in place to enforce building product quality compliance.
- There are no requirements for certification and accreditation of construction trades workers, building professionals, or construction companies.

- Accessing Australian and New Zealand standards, referred to in the national building codes, can be difficult and costly for members of the building professions.

5.4 National Building Code Administration and Compliance, Training, and Capacity Building

Enabling factors

- 8 of 13 Pacific countries have legislation for administering and enforcing compliance of their national building codes.
- In most Pacific countries, local authority by-laws exist to determine building permit requirements.
- Some town and city councils and provincial governments have planning and building departments and employ building inspectors.

Constraining factors

- Many Pacific countries have no national building board or central agency mandated to administer and manage building control.
- In most Pacific countries, legislation does not set out guidelines for regulating or providing technical management of the national building codes.
- In most Pacific countries the procedures for obtaining a building permit involve input from a variety of institutional bodies and is cumbersome and time consuming.
- In all Pacific countries there are insufficient building inspectors to manage the building permit process and enforce compliance.
- In all Pacific countries, building inspectors have not received any or only limited training on national building code compliance procedures.
- Building inspectors based in the provinces do not have funds for logistical support.
- Many private sector architects and engineers do not understand the national building code permit application process.
- Pacific countries governments have not prioritized allocating resources to manage the national building codes.
- Most Pacific country regulatory authorities do not have the skills or resources to technically assess complex building permit applications, such as high rise commercial buildings or hospitals.

5.5 Institutionalization

Enabling factors

- Technical and vocational institutions where construction technology is taught exists in most Pacific countries.
- Training institutions support the concept of institutionalizing the updated national building code by incorporating national building code training into ongoing programs.

Constraining factors

- The curriculum at most technical institutions does not include the introduction and application of the national building code.

5.6 National Building Code Awareness and Promotion

Enabling factors

- One of the outcomes of cyclones in many of the Pacific countries is that the public have become more aware of the need to cyclone proof buildings.
- Most Pacific countries have national disaster management offices with developed disaster management awareness programs that could also promote national building codes.
- Some Pacific countries have construction industry professional organizations that have organized construction industry conferences which could be used to promote national building codes.

Figure 5-1: Cyclonic Destruction and Reconstruction in the Pacific

Note: Cyclonic destruction, like that pictured above after Cyclone Winston in Fiji 2016, has made the public more aware of the need to cyclone proof buildings. Good examples of new buildings designed to withstand Category 4 cyclones are the above classrooms constructed by the Australian Department of Foreign Affairs and Trade in Tanna, Vanuatu after cyclone Pam in 2015. The buildings have been constructed using local builders and construction materials that can be easily purchased from local hardware merchants.

Source: Fiji Ministry of Education, Heritage and Arts.

Constraining factors

- National building code public awareness programs have never been delivered in any of the Pacific countries.
- Technical and financial resources are lacking to fund preparation and delivery of appropriate public awareness programs.

- Currently most local builders, provincial authorities and local politicians are unaware that a national building code exists.
- Published versions of the national building code, home builders manual, and associated building standards are not readily available to the public in most Pacific countries.

6. Actions and Activities

A suite of actions and activities has been developed in response to the enabling and constraining factors described in section 5. These actions and activities can be incorporated into an action plan to facilitate future national building code updating exercises and improve national building code application, administration, management, and compliance,

Proposed actions and activities are described below:

6.1 Legislation and Governance

Actions

In all Pacific countries, building control legislation and governance arrangements should be reviewed by a legal expert. This will be of particular importance in Pacific countries where the national building code has been recently updated but building control legislation has not been reviewed to accommodate the updated national building code.

Where there is no building act a ministry needs to be identified as the central control body responsible for administering and managing the national building code. Consultations will need to be undertaken between this central control body and the agencies (town/city councils and provincial authorities) who will be responsible for applying and enforcing compliance of the national building code. The consultations will include an agreed mechanism for aligning any existing building control regulations or ordinances with the national building code.

Activities

The reviews of Pacific countries building control legislation and governance arrangements should include the following activities:

i. Mandate the establishment of a national building board.
ii. Denote a central control body responsible for administration of the whole building project lifecycle: planning-design-construction-occupation.
iii. Set out the administrative, management, and compliance enforcement roles of the central control body and agencies responsible for application and compliance enforcement.
iv. Clearly identify the lines of responsibility between the public and private sectors, central government, municipal councils, and provincial authorities.
v. Set out a comprehensive inspection regime for administering and managing national building code compliance.
vi. Define an operative system of legal fines and penalties.
vii. Define which buildings the act will apply to and which will be exempted, for example traditional buildings and private housing outside a city or town council boundary.

viii. Harmonize the building code act with other legislation in related areas such the environment, climate change adaption, energy efficiency, renewable energy, Physical Planning, Water, Sanitation, Health, occupational health and safety, lands, and disability.

ix. Mandate a process for amending the national building code, subject to approval of the relevant minister and subject to notification in the government gazette.

The legislative review could also explore how a three-level code (gold-silver-bronze) could be enforced under the act.

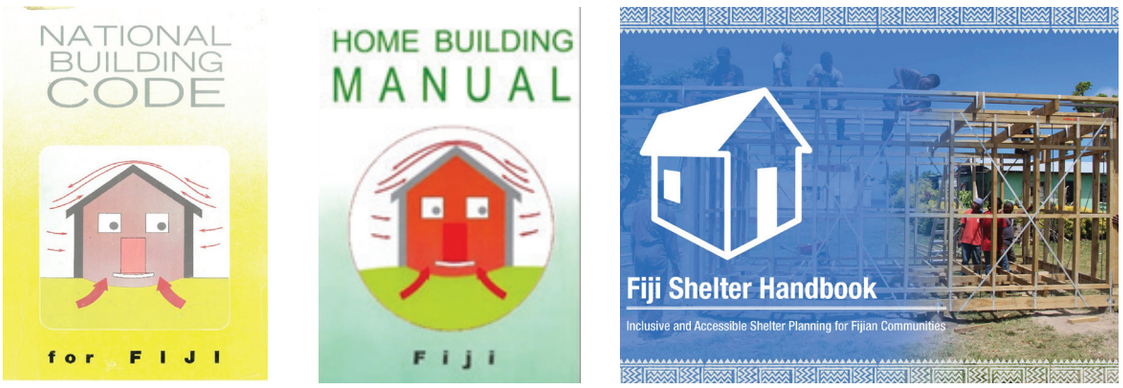
Three-level code (gold, silver, and bronze editions)

At all three participatory workshops, the option of developing a three-level code was proposed. The three levels comprise:

1. A high level "gold" version targeting institutional and commercial buildings, including school buildings and health facilities, deemed to satisfy provisions for use by university trained architects and engineers.
2. A "silver" version targeted at small builders and building technicians, this edition would include design solutions similar to what is illustrated in the current home builders manual.
3. A "bronze" version targeted at community groups. The bronze version could be a grassroots edition in the local language targeting traditional building techniques and materials used in rural areas and include a "build-back-better" guideline for improving the quality of buildings to withstand climate change events. The guideline should be developed in collaboration with relevant government departments (climate change, energy, etc.) and nongovernment organizations.

All versions would still comply with the structural codes specified in the "gold" version.

Figure 6-1: Fiji Building Codes and Manuals



Note: Fiji has the equivalent of a gold, silver and bronze code, as illustrated in its National Building Code and Home Builders Manual, which are complementary and were developed in the late 1980s under an Australian aid funded initiative and published in 1990. The Fiji Shelter Handbook is a standalone construction manual published by Shelter Cluster Fiji in 2019. The handbook does not reference Fiji's National Building Code. A review and updating of the Fiji National Building Code and Home Builders Manual should also include a review of the Fiji Shelter Handbook and its inclusion in the suite of National Building Code documents as a complimentary handbook targeting local communities.

Source: Author provided.

6.2 Building Regulations, National Building Code

Actions

In Pacific countries where there is no national building code, or where existing national building codes are outdated, a building consulting firm should be engaged in a participatory exercise to prepare a new national building code or review and update the existing national building code. A working committee will need to be established to maintain oversight of the writing of a new national building code or the review of the existing national building code. The committee should be headed by the ministry responsible for building control and include representatives from:

- town and city councils;
- provincial authorities;
- government departments with a material interest in the application of the national building code such as health and fire, environment and conservation, climate change adaption, energy efficiency and renewable energy, disaster management, public utilities, disability; and
- private sector architects and engineers.

The consultant team should include the following:

- architect
- structural engineer
- environmental engineer (health and amenity)
- energy efficiency expert (mechanical/electrical engineer)
- fire engineer
- disability expert
- climate change adaption expert
- environmental safeguards expert
- senior building inspector
- information technology expert to develop a national building code interactive online version.

Activities

Terms of reference should be developed for this consultancy. An indicative program, inputs, and cost for this exercise is attached to each of the guidance country reports. The reports note that the estimated cost for the consultancy is around $325,000. This cost could be reduced if the review is included as part of a regional review of other Pacific countries national building codes. The national building code consultancy could also be associated with the legal drafting and/or review of the building control legislation consultancy.

The consultancy should review the whole of the building construction environment and include the following activities:

i. Update building standards, particularly structural, wind, and seismic standards.
ii. Work with the disaster management office to align or integrate the code with emergency guidelines and other environmental and climate adaptation initiatives, including updating climate data such as rainfall and its impact on drainage.
iii. Review fire, egress, safety, and sanitation in line with current standards.
iv. Include sections on energy efficiency and renewable energy.

v. Address disaster reduction, in particular cyclone, earthquake, flood protection, land slide, and, for coastal locations, storm surge, and tsunami.

vi. Address accessibility guidelines for people with disabilities.

vii. Develop an online interactive version of the code with mobile phone application.

viii. Address affordable housing, which could include guidelines on how to build local/simple/affordable housing.

ix. Develop a flow chart that shows how the building approval process is administered.

x. Reference occupational health and safety (particularly work safety, scaffolding, timber treatment, and asbestos issues).

xi. Explore options for a three-level code with gold, silver and bronze editions.

The consultant team should meet and discuss with local financial and insurance institutions what national building code provisions would be required for them to adopt the national building code as their standard for approving building insurance and building loans.

6.3 Building Standards

Actions

Fiji has a Trade Standards and Quality Control Act. No other Pacific countries have acts that control the standards and quality of building materials and consumable products generally. Where a national building code exists Pacific countries rely on the standards included in the national building code to control building material standards. All Pacific countries should introduce legislation on trade and building standards, which schedules penalties for importing non-complying building materials.

Improving workmanship standards, involving certification, accreditation, and licensing of construction companies, professionals and workers, would be a longer-term strategy.

Activities

For all Pacific countries, including Fiji, building material quality control could be improved by developing an appropriate compliance system involving the following activities:

i. Update the list of acceptable building product standards in a revised national building code.

ii. Make copies of relevant building standards readily accessible to building professionals.

iii. Include in the building inspectors duty statement the monitoring of building products on site.

iv. Where national materials testing facilities exist, provide support for their upgrading and ongoing operation. Alternatively, an acceptable regional testing laboratory should be identified.

A strategy for improving workmanship standards could involve introducing a system of national certification and accreditation, including biannual licensing for all construction personnel (consultants, contractors, project managers, and trade persons). The private sector, through the various building professional associations, could work with relevant government ministries and training institutions to establish appropriate qualification benchmarks and design a regulatory framework in which certification, accreditation, and licensing can be administered and compliance monitored.

6.4 Administration and Compliance, Training, and Capacity Building

Actions

All Pacific countries require their national building code application, building control, administration, and compliance enforcement procedures strengthened. This will include a review of the administrative and management arrangements and the structure and role of the national building code central control body, including the establishment of a national building board.

Capacity building and training strategies should be developed for each Pacific country that would include the following actions:

- Appoint a human resource consultant to undertake a gap analysis of the current building control regulatory human resource environment.
- Appropriately fund authorities responsible for processing building permits and monitoring compliance, including funds for logistical support such as vehicles.
- Consider a "one-stop-shop" approach for processing building permits.
- In consultation with local construction practitioners, offer capacity building and training opportunities associated with applying the national building code to government and private sector construction practitioners.

Based on the outcome of the gap analysis:

- additional building inspector positions may need to be established and building technicians recruited to fill the positions;
- Pacific countries may need to allocate funds for additional salaries and logistical support, such as vehicles;
- building fees to be calibrated to include the cost of inspections; and
- capacity building and training opportunities should be developed for building inspectors based on the approved duty statement.

Activities

The gap analysis would include the following activities:

i. Complete a baseline study on the number of building inspectors, where they are located, and their skill level.
ii. Based on the amount of building completed in the Pacific country over the past 3 years, determine the number of building inspectors required and in what locations.
iii. Complete a gap analysis to determine the gap between the number of building inspectors required by location and the baseline study numbers.
iv. Prepare a building inspector duty statement appropriate for Pacific countries.
v. Undertake a skills gap analysis of the current cohort of building inspectors against the building inspector duty statement.

Capacity building should be provided to a construction industry professional organization that exists in some Pacific countries (e.g., Fiji, Solomon Islands, Samoa). Where they do not exist, the industry should be encouraged to establish them. These organizations can play an important role

in promoting general compliance with the national building code and construction standards. The organizations could be mandated to assist with the regulatory process, including building applications, planning, approvals, and licensing.

Consideration could also be given to outsourcing building permit application technical assessments and building inspections to the private sector through construction industry professional organizations. Professional development courses could be developed to control and manage the competency of the organization members contracted to carry out national building code approval, inspections, and non-compliance.

Capacity development programs for building professionals, builders, compliance inspectors, and regulators should be regularly rolled out and annual or biannual building industry conferences could be organized by construction industry professional organization. Retired overseas building professional volunteers could be provided through organization such as New Zealand Volunteer Service Abroad and Australian Volunteers International to assist with capacity building.

Competency based training for fire and health services to assist with approval of building permits could be included in the suite of training initiatives. Training should target the basic skills of plan reading and safety audits of building plans.

Capacity building and national building code training modules could be developed regionally and adapted and delivered nationally by either regional or national training providers.

6.5 Institutionalization

Actions

An understanding of the application of the national building codes should be included as part of the building professionals and trades workers training curriculum at the Pacific country technical institutions that deliver courses in construction, from professional engineering and architecture through to building trade courses.

Activities

Government support should be provided for institutions to integrate the national building codes into their curriculums so that it becomes an integral part of the building professionals and trades workers professional and trade practice.

“Train the trainer” training in the national building code may also be needed for technical teachers.

National building code curriculums could be prepared regionally and then adapted nationally to the appropriate technical institution, whether university, vocational college, or rural trade center.

6.6 Awareness and Promotion

Action

A national building code awareness and promotion strategy should be developed for each Pacific country. Funding should be made available to deliver the awareness programs regularly.

Activities

The strategy should include the following:

i. Published versions of the national building code and associated building standards to be readily available to building professionals and the public and a source identified where the hard copies can be purchased.
ii. The national building code should be online and interactive with a mobile phone application.
iii. Awareness and promotion delivered and to involve construction industry professional organizations, the disaster management office, NGOs, print, radio, and TV media. A media management company could be employed to roll out the awareness strategy.
iv. Ethical awareness and industry best practice to be incorporated as key elements in all promotional activities.

A national building code awareness and promotion strategy could be prepared regionally and adapted and delivered nationally through regional or national media management providers, NGOs, construction industry professional organizations, and national and local governments.

Regular industry conferences should be staged and managed by construction industry professional organizations, with support from Pacific country governments. These conferences should include promotion of:

- the national building code,
- good design and construction practice,
- proper use of building materials, and
- the industry generally.

7. Action Plans

7.1 Action Plans Generally

Based on the actions and activities identified under section 6, a generic action plan has been developed. Each Pacific country can develop its own national action plan based on the Generic Action Plan and the outcomes of the workshops and questionnaires attached as **Annexes 1 and 2**.

If properly and diligently executed, the national building code action plans will:

- improve construction quality,
- help mandate local and imported building supply standards,
- reduce building operational and maintenance costs,
- increase building life span,
- address climate change concerns, and
- help raise construction standards to withstand more severe natural events.

7.2 Generic Action Plan

A Generic Action Plan of short-term and long-term activities is set out below.

Short-term

Legislation

i. A legal expert be appointed to review the Pacific countries' building control legislation relative to the existing or updated national building code and ensure that the legislative and governance arrangements reflect the administrative, management, and compliance requirements prescribed in the national building code.

ii. Where there is no building act a ministry will be identified as the central control body responsible for administering and managing the national building code. A new act will be drafted in consultation with the central control body and:

   a. the agencies (town/city councils and provincial authorities) who will be responsible for applying and enforcing compliance of the NBC,

   b. government ministries and departments with associated legislation (health, occupational health and safety, environment, etc.), and

   c. private sector construction practitioners and construction industry professional organizations.

National building code

i. In Pacific countries with no national building code, or with outdated existing national building codes, a building consulting firm is to be engaged in a participatory exercise to review the country's building environment and prepare a new national building code or updated national building code with associated manuals (silver and bronze versions) following the process outlined under section 6.2.

ii. The national building code to be available in hard copy and online. The online version to be interactive with mobile phone application.

iii. A review to be undertaken of the administrative and management arrangements and the structure and role of the national building code central control body, including the establishment of a national building board.

Compliance enforcement

i. A human resource consultant to be engaged to undertake a gap analysis of the Pacific countries' current building control regulatory human resource environments to identify shortfalls in regulatory resources and skills.

ii. The human resource consultant to work with the national building code central control body and town councils and local governments/provinces to develop a strategy for establishing and resourcing a building regulatory office in each town council and local government/province.

iii. Simplify building permit application and processing requirements including consideration of a one-stop-shop application approach.

iv. Review, and, if necessary, increase compliance enforcement funding arrangements.

Building standards

i. A legal expert to be engaged to draft a new law setting out trade and building material product standards and identify an appropriate body responsible for monitoring and enforcing building material quality compliance. For Fiji and Vanuatu, the legal expert to review the existing legislation.

Capacity building and training

i. Capacity development and training programs targeting building professionals, builders, compliance inspectors and regulators to be developed and delivered in conjunction with the roll out of the new or updated national building codes.

ii. Material support to be provided to construction industry professional organizations that exist in some of the Pacific countries (e.g., Fiji, Solomon Islands, Samoa). Material support could include the establishment of a small secretariat to administer the construction industry professional organization and/or the provision of office space. In Pacific countries' without such organizations, the central control body responsible for administering and managing the national building code should encourage the local construction industry to establish one. This could be achieved by the provision of incentives such as material support for a secretariat.

iii. Construction industry professional organizations to be mandated to assist with the regulatory process, including technical assessment of building applications, planning approvals, building inspections, and licensing.

Awareness and Promotion

i. An awareness program to be developed by the national building code central control body to promote the launching of a new/updated national building code and associated manuals and deliver the program to the general public in urban and rural areas. The program to be designed with assistance from the:
    a. Relevant government agencies and state owned enterprises (Works, Health, Water, and Sanitation, Power and Fire Brigade),
    b. Climate adaption office,
    c. Organizations promoting accessibility awareness for people with a disability such as the Pacific Disability Forum,
    d. Department of Energy (targeting energy efficiency and renewable energy initiatives),
    e. Disaster management office,
    f. Construction industry professional organizations,
    g. Appropriate NGOs, and
    h. Private sector media management company.

ii. Publish hard copies of the updated National Building Code and associated manuals and identify outlets where they can be purchased.

iii. Promote the national building code website and ensure that it is easily accessible by both the construction profession and the public.

Long term

i. Develop, fund and deliver appropriate training courses targeted at building professionals who apply the national building code and building inspectors who monitor compliance.

ii. Address quality control of building material testing by either/or:
    a. commit funding to supporting and expanding existing laboratories, and
    b. identify an acceptable regional testing laboratory.
iii. Support construction industry professional organizations to hold annual conferences and to instigate joint fellowship programs between government and private sector and the construction industry sector with other industry sectors in other countries.
iv. Support the integration of the updated national building code into the curriculums of technical institutions that deliver courses in construction, from professional engineering and architecture through to building trade courses, so that it becomes an integral part of the building professionals and trades workers construction practice.
v. Support and fund the institutionalization of national building code promotional activities so that they are delivered on a regular basis.
vi. Support local construction industry professional organizations to certify and accredit building professionals and promote good building design.
vii. Consider introducing a system of national certification, accreditation, and licensing for builders.

National building code coordinator appointed

To facilitate this action plan in larger Pacific countries, a national building code coordinator should be appointed for a set term to be based on the national building code central control body. The coordinator to work closely with other government agencies (including climate adaption, energy efficiency, renewable energy), disaster management office, construction industry professional organizations, appropriate NGOs, and consultants engaged to carry out the action plan activities. The coordinator to provide support to the city/town councils and provinces to implement the plan.

8. Potential Areas of Support for PRIF Partners

8.1 Role of PRIF

PRIF partners can play an important role assisting Pacific countries to update the technical content of the national building codes and improve the national building code's administration, management, and compliance. This assistance can be applied nationally and regionally.

Based on the Pacific countries' generic action plans, a suite of high-priority interventions are suggested for consideration by PRIF development partners, regional organizations, universities, private sector, and relevant stakeholders. The interventions are designed to support Pacific countries in achieving the following key outcomes:

i. Each Pacific country has an up-to-date national building code legislated by the national government.
ii. Each pacific country has the resources and skills to administer, manage, and enforce compliance of the national building code.

iii. The importance of a national building code is understood and supported by government, the local construction industry, and the public.

iv. The national building code is incorporated in the curriculums of local technical institutes that teach construction technology.

Nationally, PRIF partners can provide material support and guidance to assist Pacific countries in developing and implementing a national building code action plan based on the generic action plan.

Regionally, PRIF development partners could support a regional organization to coordinate, design, and deliver the national building code improvement activities.

8.2 Regional Co-Ordination

PRIF could identify a regional organization as a home for a national building code regional co-ordination office for Pacific countries national building code improvement activities. The national building code regional co-ordination office would be based at a regional location, e.g., Suva, and be staffed by a national building code regional support coordinator funded by a PRIF development partner.

The national building code regional support coordinator would be responsible for:

- coordinating Pacific countries national building code legislative and governance support;
- coordinating the implementation of Pacific countries national building code action plans;
- developing regional technical guidelines and support for national building code reviews and updates;
- developing regional capacity building and training programs targeted at building professionals, builders, compliance inspectors, and regulators;
- coordinating delivery of capacity building and training programs;
- developing generic awareness programs to promote the national building code;
- assisting pacific countries to design and develop their own national building code promotion and awareness strategies based on the generic awareness programs developed at the regional level;
- supporting Pacific countries in delivering national building code promotion and awareness activities, and
- supporting the establishment of a regional organization to coordinate Pacific country construction industry professional organization activity, including regional training workshops and conferences. A possible vehicle to provide this regional coordination could be the South Pacific Engineers Association, which is currently active in Fiji and Samoa.

A regional co-ordination office could also provide Pacific countries with technical assistance in the assessment of building permits for complex building projects. this technical expertise could be provided where national building code regulators do not have in-house expertise to undertake complex assessments and there are no independent building consultants in-country that could provide the expertise. The regional coordination office would outsource this expertise to independent building consultants in other Pacific countries or from a PRIF development partner country. It would be expected that the cost of providing this expertise would be included in the building permit application fee.

8.3 Potential Areas of National Support for PRIF Partners

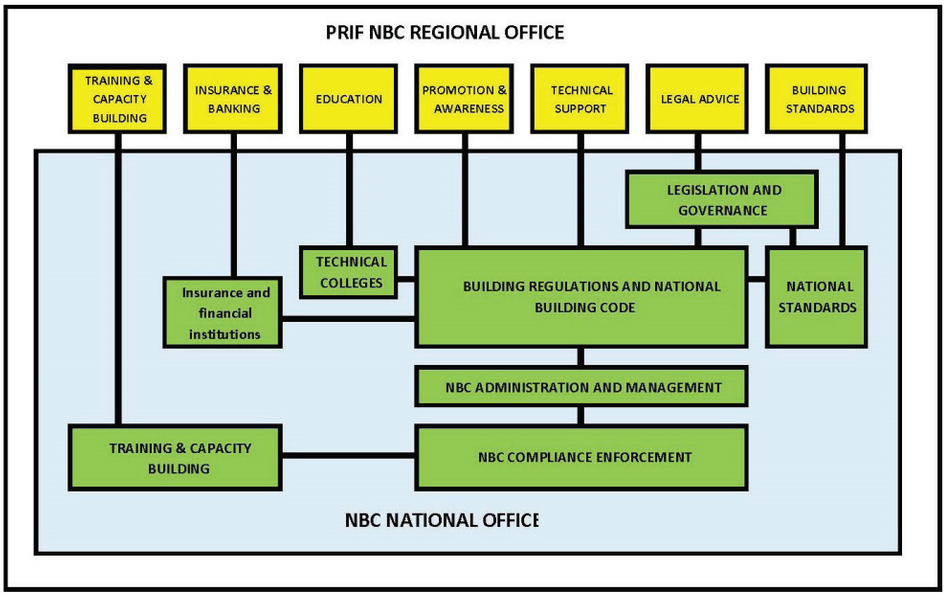
Support PRIF partners can provide to complement regional assistance and help Pacific countries' develop and implement an action plan of activities nationally, based on the generic action plan developed under Section 7, could include:

i. Preparing terms of reference and assisting with recruiting and funding of:
   a. a national building code coordinator—for smaller Pacific countries (Niue, Nauru, Tuvalu, Cook Islands, Palau, Kiribati, Federated States of Micronesia (FSM), Marshall islands, Tonga) the role of the national coordinator could be carried out by an established government construction officer with training support from the national building code regional office;
   b. a legal expert to review existing building control legislation;
   c. a building consulting firm to develop new national building codes or review existing national building codes including associated construction manuals;
   d. a human resource consultant to undertake a gap analysis of the building control regulatory human resource environment and develop a strategy for establishing a building regulatory office in each town council and local governments/province; and
   e. a legal expert to draft a new law setting out trade and building material product standards.

ii. Provide funding support for:
   a. delivery of national building code capacity building and training programs,
   b. delivery of awareness programs to promote the national building code, and
   c. operation of materials testing laboratories.

The diagram below illustrates the relationship between the suite of activities that could be provided by PRIF partners at the regional level with national level activities outlined in the generic national action plan.

Figure 8-1: National Standards



Note: NBC = National building code.

9. Five-Year Costed Program (Road Map)

9.1 Overview

Based on the potential areas of PRIF support outlined under section 8, a 5-year program has been developed for consideration by PRIF partners. The 5-year program (road map) demonstrates how a PRIF partner and/or partners could support a national building code regional office to assist with national building code updates, administration, management, and compliance enforcement. The road map includes a number of consultancies which could be supported and funded by different PRIF partners.

Regional office work plans, in the form of bar charts, have been developed and costed for each of the 5 years. The work plans outline support to be provided regionally and nationally and include costings for the following:

- Regional coordinator (international) based in Suva.
- Regional support officer (national).
- Establishment and recurrent costs for a Suva based regional office to be associated with a regional organization.
- National coordinators (national-senior engineer/architect) based in each of the four largest Pacific countries (Fiji, Solomons, Vanuatu, Samoa).
- Regional coordinator travel costs.
- Grants to support the establishment and ongoing support of regional and national construction industry professional organizations.
- Consultancies.

9.2 Consultancies

It is proposed that the National Building Code Regional Office procure and manage eight consultancies over the 5 years:

i. *Fiji-Vanuatu-Solomons-Nauru National Building Code Review* (contracted to an international building consulting company): A building consulting team to review and rewrite the national building codes in Fiji, Vanuatu, and Solomon Islands and write a new national building code for Nauru. Construction in these countries has historically followed Australian/New Zealand construction practice.

ii. *FSM-Palau National Building Code Review* (contracted to an international building consulting company): A building consulting team to write new national building codes for FSM and Palau. Construction in these countries has historically followed American construction practice.

iii. *National building code and building standards legal review* (contracted to an individual international Legal Consultant): A legal consultant to review national building code and *building material product standards* legislation proposed or enacted at Pacific countries requesting a legislation review and recommend improvements and upgrades.

iv. *National building code human resource skills gap analysis* (contracted to an individual international human resource consultant): A human resource consultant with expertise in

building controls to undertake a skills gap analysis of the capacity and capability of Pacific country building inspectorates to adequately enforce national building code compliance.

v. *National building code training and capacity building* (contracted to an international training consulting company): At completion of the human resource gap analysis a team of trainers and capacity builders with expertise in construction education to develop a package of training and capacity building modules and deliver the training annually.

vi. *National building code awareness strategy* (contracted to an international promotional/marketing consulting company): at completion of the human resource gap analysis a promotional/marketing team to develop with each pacific countries building central control body a national building code awareness strategy and support the Pacific country building central control body to roll out the strategy over a 3-year period.

vii. *Assessment of the capacity of building materials testing laboratories* (contracted to an individual international building materials testing consultant): a building materials testing consultant to review the building materials testing laboratories at the 6 Pacific countries that currently have these facilities and recommend how the laboratories can be best utilized to satisfy national building code and building standards legislation.

viii. *National building code implementation review* (contracted to an individual international building consultant): In year 5, an independent building consultant to be engaged to review how the new and updated national building codes have been implemented and make recommendations on how administration, management, and compliance can be improved.

9.3 Annual Activities

The activities outlined in the work plans to be managed annually by the regional coordinator's office can be summarized as follows:

Year 1

- Regional coordinator recruited. Regional Coordinator's Office established in Fiji.
- Orientation tour of all Pacific countries by the regional coordinator.
- Pacific countries national building code strengthening requirements identified.
- National coordinators selected and appointed.
- Building consulting companies selected, appointed and managed to review and rewrite national building codes in Fiji, Vanuatu, Solomons and write new national building codes for Nauru, Palau, and FSM.
- Legal consultant selected, appointed, and managed.
- Human resource consultant selected, appointed, and managed.

Year 2

- Regional office managed and national coordinators supported.
- Travel with building consultants and assist in consultations with the six Pacific countries having national building codes reviewed and/or written.
- Visit seven Pacific countries without updated national building codes and consult on national building code administration, management, and compliance strengthening requirements.
- Training and capacity building consulting company selected, appointed, and managed.

- Promotional/marketing consulting company selected, appointed, and managed.
- Pacific countries assisted as required with complex building permit applications.

Year 3

- Regional office managed and national coordinators supported.
- Travel with training and awareness consultants and assist in consultations with the Pacific countries and consult Pacific countries on national building code administration, management, and compliance strengthening requirements.
- Support the establishment of construction industry professional organizations and agree funding grant arrangements.
- Pacific countries assisted as required with complex building permit applications.

Year 4

- Regional office managed and national coordinators supported.
- Travel to Pacific countries and consult Pacific countries on national building code administration, management, and compliance strengthening requirements.
- Provide support to construction industry professional organizations and manage their funding grants.
- Support and manage the annual national building code training and capacity building conducted by the selected training consulting company.
- Support and manage the national building code awareness strategy as rolled out by the selected promotional/marketing consulting company.
- Consultant for the assessment of the capacity of building materials testing laboratories selected, appointed and managed.
- Pacific countries assisted as required with complex building permit applications.

Year 5

- Regional office managed and national coordinators supported.
- Travel to Pacific countries and consult them on national building code administration, management, and compliance strengthening requirements.
- Provide support to construction industry professional organizations and manage their funding grants.
- Support and manage the annual national building code training and capacity building conducted by the selected training consulting company.
- Support and manage the national building code awareness strategy as rolled out by the selected promotional/marketing consulting company.
- Consultant for the national building code implementation review selected, appointed, and managed.
- Pacific countries assisted as required with complex building permit applications.

9.4 Road Map Costs

Table 9-1 summarizes the 5-year road map costs and are further detailed in **Annex 1**. The estimated cost of the 5-year program is $5,256,300 comprising:

- Regional office costs: $1,494,150
- National coordinator costs: $606,900
- Construction industry professional organization financial grants: $252,000
- Consultancies: $2,903,250

Table 9-1: Five-year road map costs

Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Total $
REGIONAL OFFICE COSTS						
Personnel						
Regional coordinator (international)						
• Salary (DFAT-C4)	$126,000	$126,000	$126,000	$126,000	$126,000	**$630,000**
• Mobility and accommodation allowance	$46,200	$46,200	$46,200	$46,200	$46,200	**$231,000**
• Mobilization, demobilization, personal expenses	$15,400	$16,100	$16,100	$7,000	$19,600	**$74,200**
Support officer (national)						
• Salary	$19,250	$21,000	$21,000	$21,000	$21,000	**$103,250**
Office						
• Establishment costs (F&E/ computers/web portal	$17,500					**$17,500**
• Rent	$9,800	$8,400	$8,400	$8,400	$7,000	**$42,000**
• Consumables/communications/ local transport/web portal	$8,400	$8,400	$8,400	$8,400	$8,400	**$42,000**
Travel						
Pacific country visits (for more than 3 hours-business fares allowed)	$105,000	$39,200	$70,000	$70,000	$70,000	**$354,200**
NATIONAL COORDINATORS (senior engineer—local salary)						
• Fiji salary	$7,350	$29,400	$29,400	$29,400	$29,400	**$124,950**
• Vanuatu salary	$8,400	$33,600	$33,600	$33,600	$33,600	**$142,800**
• Solomons salary	$9,450	$37,800	$37,800	$37,800	$37,800	**$160,650**
• Samoa salary	$10,500	$42,000	$42,000	$42,000	$42,000	**$178,500**
CONSTRUCTION INDUSTRY PROFESSIONAL ORGANIZATIONS						
Financial grants			$84,000	$84,000	$84,000	**$252,000**
CONSULTANCIES						
Advertising costs	$6,300	$2,100		$2,100	$2,100	**$12,600**
• South Pacific national building code review	$80,220	$721,980				**$802,200**
• North Pacific national building code review		$584,500				**$584,500**

Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Total $
• Legal consultant	$97,335	$75,565				**$172,900**
• Human resources gap analysis	$99,260	$72,590				**$171,850**
• Training and capacity building		$24,325	$170,275	$145,950	$145,950	**$486,500**
• National building code awareness strategy		$33,250	$334,250	$35,000	$35,000	**$437,500**
• Assessment of the capacity of building materials testing laboratories				$79,100		**$79,100**
• National building code implementation review					$156,100	**$156,100**
TOTAL	**$666,365**	**$1,922,410**	**$1,027,425**	**$775,950**	**$864,150**	**$5,256,300**

Note: Salary (DFAT-C4) = Australian Government – Department of Foreign Affairs and Trade Aid Adviser Renumeration Framework (ARF), Job categories

Annex 1: 5-Year Road Map Costs

1. South Pacific national building code review 35
2. North Pacific national building code review 37
3. Legal consultant 39
4. Human resource gap analysis 41
5. Training and capacity building 43
6. National building code awareness strategy 45
7. Assessment of the capacity of building materials testing laboratories 47
8. National building code implementation review 48

CONSULTANCY No 1: FIJI-VANUATU-SOLOMONS -NAURU NBC REVIEW

INDICATIVE WORK PLAN

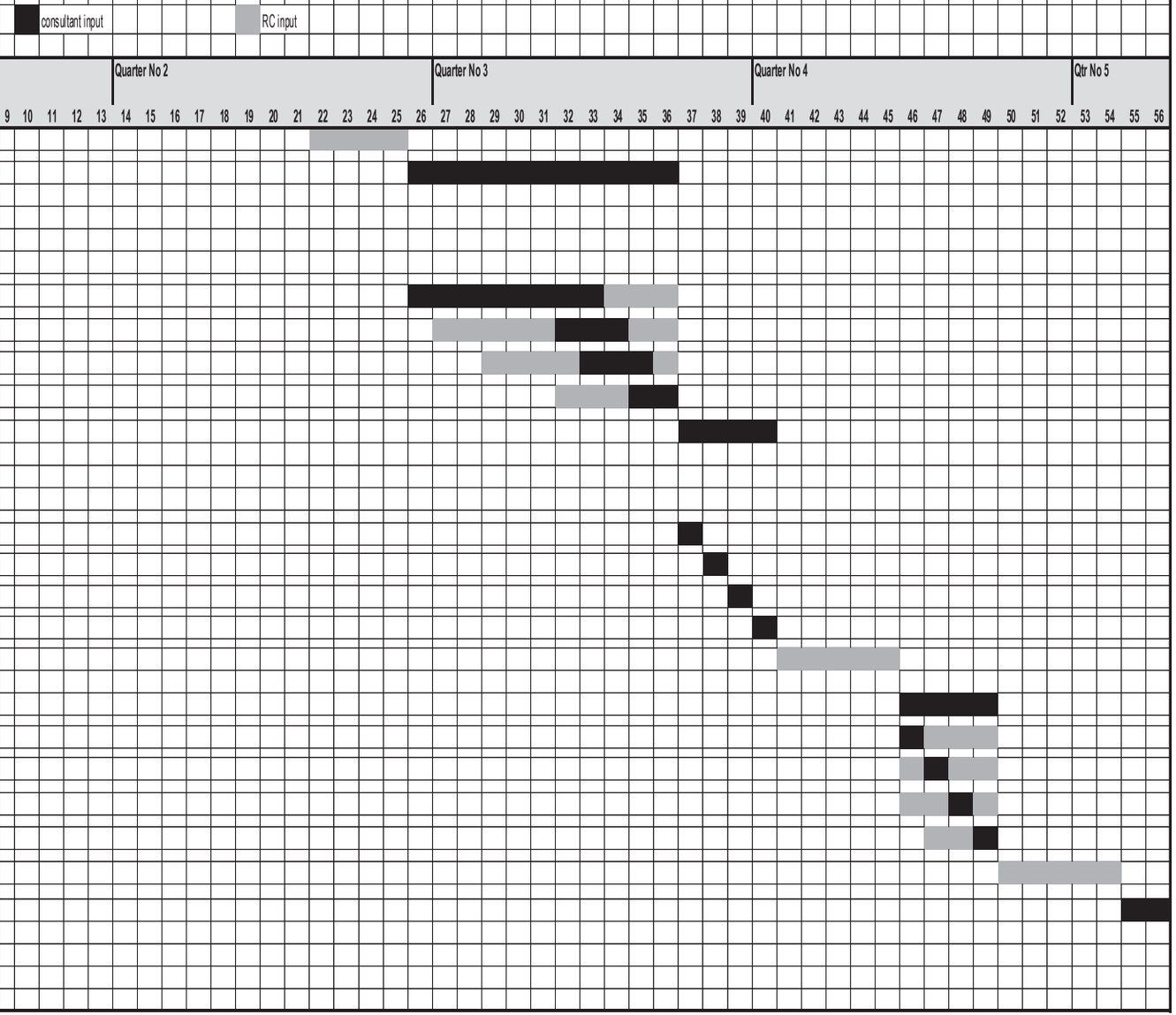
■ consultant input ■ RC input

	ACTIVITY DESCRIPTION	total wks
	CONSULTANT RECRUITED AND APPOINTED	
	Consultant ToR/RfP advertised and assessed	10
	Consultant appointed	
	Consultant mobilises	4
1	INCEPTION REPORT	3
	. Establish Consultancy Team	
	. Desk review of current NBCs and HBMs	
	. Desk review current building code literature	
	. Skype hook up with Regional Co-ordinator	
	. Finalise review methodology	
	. Prepare work plan	
	RC / donor approve Inception report	3
	RC prepares mission approvals	
2	CONSULTATIONS	8
	. Fiji briefing with RC for all four countries	
	. Briefing with RC/Gov	
	. Site interviews with individual stakeholders	
	. Consultative workshop with all stakeholders	
	. Follow up site interviews	
2.1	FIJI CONSULTATION	3
2.2	VANUATU CONSULTATION	2
2.3	SOLOMON ISLANDS CONSULTATION	2
2.4	NAURU CONSULTATION	1
3	NBC / HBM REVIEW	6
	. Record of findings from consultations	
	. Initial recommendations	
	. Draft review presented to stakeholders for comment	
	. Draft review incorporates stakeholder comments	
3.1	FIJI REVIEW	13
3.2	VANUATU REVIEW	10
3.3	SOLOMON ISLANDS REVIEW	8
3.4	NAURU REVIEW	6
4	RC/ governments approve Review and provide feedbac	4

Quarter No 1	Quarter No 2	Quarter No 3	Quarter No 4	Qtr No 5
Week 1 2 3 4 5 6 7 8 9 10 11 12 13	14 15 16 17 18 19 20 21 22 23 24 25 26	27 28 29 30 31 32 33 34 35 36 37 38 39	40 41 42 43 44 45 46 47 48 49 50 51 52	53 54 55 56

CONSULTANCY No 1: FIJI-VANUATU-SOLOMONS-NAURU NBC REVIEW Cont'd

INDICATIVE WORK PLAN



CONSULTANCY No:2 - FSM-PALAU NBC REVIEW

INDICATIVE WORK PLAN

consultant input

RC input

ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36	37	38	39	Quarter No 4 40	41	42	43	44
CONSULTANT RECRUITED AND APPOINTED																																													
Consultant ToR/RfP advertised and assessed	10																																													
Consultant appointed																																													
Consultant mobilises	4																																												
1 INCEPTION REPORT	3																																												
. Establish Consultancy Team																																													
. Desk review of current NBCS and HBMS																																													
. Desk review current building code literature																																													
. Skype hook up with Regional Co-ordinator																																													
. Finalise review methodology																																													
. Prepare work plan																																													
RC / donor approve Inception report	3																																												
RC prepares mission approvals																																													
2 CONSULTATIONS	5																																												
. Honolulu briefing with RC for both countries																																													
. Briefing with Gov in-country																																													
. Site interviews with individual stakeholders																																													
. Consultative workshop with all stakeholders																																													
. Follow up site interviews																																													
2.1 FSM CONSULTATION	3																																												
2.2 PALAU CONSULTATION	2																																												
3 NBC / HBM REVIEW	7																																												
. Record of findings from consultations																																													
. Initial recommendations																																													
. Draft review presented to stakeholders for comment																																													
. Draft review incorporates stakeholder comments																																													
3.1 FSM REVIEW	12																																												
3.2 PALAU REVIEW	9																																												
4 RC/ governments approve Review and provide feedbac	4																																												
5 BUILDING CODE SUITE REWRITE	8																																												
. NBC written																																													
. Building Manuals written																																													
> HBM																																													

CONSULTANCY No:2 - FSM-PALAU NBC REVIEW Cont'd

INDICATIVE WORK PLAN

consultant input

RC input

	ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36	37	38	39	Quarter No 4 40	41	42	43	44
	> Simplified Handbook for Village buildings																																													
5.1	FSM NBC WRITTEN	8																																												
5.2	PALAU NBC WRITTEN	6																																												
6	DRAFT NBC presented to Govs for comment	4																																												
	. Country presentations by Team Leader and RC																																												
6.1	FSM PRESENTATION	1																																											
6.2	PALAU PRESENTATION	1																																											
7	RC-GOVs REVIEW AND PROVIDE COMMENTS	5																																											
	Cordination by RC																																												
8	DRAFTS FINALISED WITH RC-GOV COMMENTS	3																																											
8.1	FSM	3																																											
8.2	PALAU	3																																											
9	RC-GOVs APPROVE FINAL NBCs	5																																											
10	PROJECT COMPLETION REPORT	3																																											
	. Record of NBC review and rewrite																																												
	. Evaluation of review and rewrite process																																												
	. Lessons Learned																																												
	. Follow up steps for implementing the NBC																																												

CONSULTANCY No3: NBC LEGAL REVIEW

INDICATIVE WORK PLAN

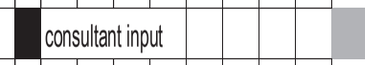
consultant input

RC input

ACTIVITY DESCRIPTION	Wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36	37	37
LEGAL CONSULTANT RECRUITED AND APPOINTED																																							
Legal ToR/RfP advertised and assessed																																							
Consultant appointed																																							
Consultantant mobilises																																							
1 INCEPTION REPORT	3																																						
. Desk review of available literature																																							
. PIC NBC Legal Situational Analysis																																							
. Skype hook up with Regional Co-ordinator																																							
. Coodinate with building consultants																																							
. Prepare work plan																																							
RC / donor approve Inception Report	3																																						
RC prepares mission approvals																																							
2 CONSULTATIONS	14																																						
. Fiji briefing with RC																																							
. Briefing with RC/Gov																																							
. Site Interviews with individual stakeholders																																							
. Gov debriefing with NBC implementing and Building Standards agencies																																							
Fiji	2																																						
Port Vila	1																																						
Honiara	1																																						
Apia	1																																						
Nukolofa	1																																						
Tarawa	1																																						
Nauru	1																																						
Funafuti	1																																						
Palau	1																																						
FSM	1																																						
Marshals	1																																						
Cooks	1																																						
Niue	1																																						
3 LEGAL REPORT	4																																						
. Record of findings from consultations																																							
. Co-ordination with Building Cconsultant																																							
. Initial recommendations																																							

CONSULTANCY No3: NBC LEGAL REVIEW Cont'd

INDICATIVE WORK PLAN



	ACTIVITY DESCRIPTION	Wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36	37	37
	. Draft review presented to stakeholders for comment																																							
	. Draft review incorporates stakeholder comments																																							
	RC/GOVs review and approve recommendations	5																																						
4	FINAL LEGAL RECOMMENDATIONS	9																																						
	.Co-ordination with Building Consultant																																							
	.Comments included																																							
5	PROJECT COMPLETION REPORT	1																																						
	. Evaluation of review process																																							
	. Lessons Learned																																							
	. Follow up steps for implementing the NBC																																							

CONSULTANCY No4: NBC HR GAP ANALYSIS

INDICATIVE WORK PLAN

consultant input

RC input

ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34
HR CONSULTANT RECRUITED AND APPOINTED																																			
Consultant ToR/RfP advertised and assessed	10																																		
Consultant appointed																																			
Consultant mobilises	4																																		
1 INCEPTION REPORT	3																																		
. Desk review of available literature																																			
. PIC NBC HR Situational Analysis																																			
. Skype hook up with Regional Co-ordinator																																			
. Finalise HR Gap Analysis methodology																																			
. Prepare work plan																																			
RC / donor approve Inception Report	3																																		
RC prepares mission approvals																																			
2 CONSULTATIONS	14																																		
. Fiji briefing with RC																																			
. Briefing with RC/Gov																																			
. Site Interviews with individual stakeholders																																			
. Gov debriefing with NBC implementing agency																																			
Fiji	2																																		
Port Vila	1																																		
Honiara	1																																		
Apia	1																																		
Nukolofa	1																																		
Tarawa	1																																		
Nauru	1																																		
Funafuti	1																																		
Palau	1																																		
FSM	1																																		
Marshals	1																																		

CONSULTANCY No4: NBC HR GAP ANALYSIS Cont'd

INDICATIVE WORK PLAN

consultant input RC input

ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34
Cooks	1																			■															
Niue	1																				■														
3 GAP ANAYLSIS REPORT	4								▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	■	■	■	■										
. Record of findings from consultations																																			
. Initial recommendations																																			
. Building Inspectors Duty Statement																																			
. Costings																																			
4 REPORT REVIEWED	6																									▒	▒	▒	▒	▒	▒	▒			
. RC reviews Report																																			
. Report circulated to PICs for comment																																			
. RC co-lates commentry																																			
5 REPORT FINALISED	2																															■	■		
. Report finalised incorporating PIC comments																																			
9 PROJECT COMPLETION REPORT	2																																	■	■
. Record of NBC review and rewrite																																			
. Evaluation of review and rewrite process																																			
. Lessons learned																																			
. Follow up steps for implementing the NBC																																			

CONSULTANCY No5: NBC TRAINING AND CAPACITY BUILDING

INDICATIVE IMPLEMENTATION WORK PLAN

consultant input RC input

	ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36
	TRAINING CONSULTANT RECRUITED AND APPOINTED																																				
	Consultant ToR/RfP advertised and assessed	10																																			
	Consultant appointed at completion of Gap Analysis																																				
	Consultant mobilses	4																																			
1	INCEPTION REPORT	3																																			
	. Desk review of available literature																																				
	. Training strategy developed																																				
	. Skype hook up with Regional Co-ordinator																																				
	. Prepare work plan																																				
	RC / donor approve Inception report	3																																			
2	TRAINING MATERIAL PREPARED	3																																			
	. Fiji briefing																																				
	. Training module prepared																																				
	RC / donor approve training and awareness mate	3																																			
	RC prepares mission approvals																																				
3	TRAINING DELIVERED																																				
	. Fiji briefing with RC																																				
	. Briefing with RC/Gov																																				
	. Site Interviews with individual stakeholders																																				
	. Gov debriefing with NBC implementing agency																																				
	Fiji	2																																			
	Port Vila	1																																			
	Honiara	1																																			
	Apia	1																																			
	Nukolofa	1																																			
	Tarawa	1																																			

CONSULTANCY No5: NBC TRAINING AND CAPACITY BUILDING Cont'd

INDICATIVE IMPLEMENTATION WORK PLAN

■ consultant input ■ RC input

	ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36
	Nauru	1																				■															
	Funafuti	1																					■														
	Palau	1																						■													
	FSM	1																							■												
	RMI	1																								■											
	Cooks	1																									■										
	Niue	1																										■									
4	TRAINING DELIVERY REPORT(DRAFT)																											■	■	■	■						
	. Record of training delivery																																				
	. Lessons learned																																				
	. Recommendations for furure training delivery																																				
	. Report reviewed	3																															■	■	■		
5	FINAL REPORT																																				
	. Final report incorporating comments	2																																		■	■
	. PCR	1																																			■

CONSULTANCY No6: NBC AWARENESS STRATEGY

INDICATIVE WORK PLAN

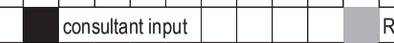
consultant input

RC input

	ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	Quarter No 2 13	14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36
	AWARENESS CONSULTANT RECRUITED AND APPOINTED																																				
	Consultant ToR/RfP advertised and assessed	10																																			
	Consultant appointed at completion of Gap Analysis																																				
	Consultant mobilses	4																																			
1	INCEPTION REPORT	3																																			
	. Desk review of available literature																																				
	. Awareness strategy developed																																				
	. Skype hook up with Regional Co-ordinator																																				
	. Prepare work plan																																				
	RC / donor approve Inception report	3																																			
2	AWARENESS MATERIAL PREPARED	3																																			
	. Fiji briefing																																				
	. Awareness material developed																																				
	. NBC online strategy developed																																				
	RC / donor approve training and awareness mate	3																																			
	RC prepares mission approvals																																				
3	AWARENESS DELIVERED																																				
	. Fiji Briefing with RC																																				
	. Briefing with RC/Gov																																				
	. Site Interviews with individual stakeholders																																				
	. PICs assisted with NBC Online																																				
	. Gov debriefing with NBC implementing agency																																				
	Fiji	2																																			
	Port Vila	1																																			
	Honiara	1																																			
	Apia	1																																			
	Nukolofa	1																																			
	Tarawa	1																																			
	Nauru	1																																			
	Funafuti	1																																			
	Palau	1																																			
	FSM	1																																			
	RMI	1																																			

CONSULTANCY No6: NBC AWARENESS STRATEGY Cont'd

INDICATIVE WORK PLAN



ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31	32	33	34	35	36
Cooks	1																																			
Niue	1																																			
4 NBC ON-LINE	4																																			
. Online interactive versions of all PIC NBCs in place																																				
5 AWARENESS DELIVERY REPORT(DRAFT)	4																																			
. Record of awareness delivery																																				
. Lessons learned																																				
. Recommendations for furure awareness delivery																																				
. Report reviewed	3																																			
6 FINAL REPORT																																				
. Final Report incorporating comments	2																																			
. PCR	1																																			

CONSULTANCY No7: ASSESSMENT OF CAPACITY OF BUILDING MATERIALS TESTING LABORATORIES

INDICATIVE PERSONNEL INPUTS AND COSTS

Expert rate based at DFAT C4 level - Consultant recruited as an indivdual

Indicates time in the field

ACTIVITY DESCRIPTION	Week 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total days	Rate AUD	total AUD
BUILDING MATERIALS CONSULTANT	5	5				5	5	5	5	5	5	5	5	5	5						5	5	5	75	$933	$69,975
																	TOTAL PERSON DAYS							75		$69,975
																								Contingency		$6,998
																									total AUD	$76,973
																									say	$77,000
																			PAYMENT MILESTONES							
																					Inception Report				15%	$11,550
																								Travel		$36,000
																				Strengthening Report				50%	$38,500
																							Final report		25%	$19,250
																			Project Completion Report						10%	$7,700
																								TOTAL		$113,000

CONSULTANCY No8: NBC IMPLEMENTATION REVIEW (YR 5)

INDICATIVE WORK PLAN

consultant input

RC input

	ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31
	BUILDING CONSULTANT RECRUITED AND APPOINTED																																
	Consultant ToR/RfP advertised and assessed	10																															
	Consultant appointed in Yr5 of regional program																																
	Consultant mobilises	3																															
1	INCEPTION REPORT	2																															
	. Desk review of available literature																																
	. PIC NBC Situational Analysis																																
	. Skype hook up with Regional Co-ordinator																																
	. Prepare work plan																																
	RC / donor approve Inception Report	3																															
	RC prepares mission approvals																																
2	CONSULTATIONS	17																															
	. Fiji briefing with RC																																
	. Briefing with RC/Gov																																
	. Site interviews with individual stakeholders																																
	. Gov debriefing with NBC implementing agency																																
	Fiji	2																															
	Port Vila	1																															
	Honiara	1																															
	Apia	1																															
	Nukolofa	1																															
	Tarawa	1																															
	Nauru	1																															
	Funafuti	1																															
	Palau	1																															
	FSM	1																															
	RMI	1																															
	Cooks	1																															
	Niue	1																															

CONSULTANCY No8: NBC IMPLEMENTATION REVIEW (YR 5) Cont'd

INDICATIVE WORK PLAN

consultant input — RC input

	ACTIVITY DESCRIPTION	total wks	Quarter No 1 Week 1	2	3	4	5	6	7	8	9	10	11	12	13	Quarter No 2 14	15	16	17	18	19	20	21	22	23	24	25	26	Quarter No 3 27	28	29	30	31
3	IMPLEMENTATION REVIEW REPORT	3																															
	. Record of findings from consultations																																
	. Initial recommendations																																
4	REPORT REVIEWED	6																															
	. RC Reviews Report																																
	. Report circulated to PICs for comment																																
	. RC co-lates commentry																																
5	REPORT FINALISED	2																															
	. Report finalised incorporating PIC comments																																
9	PROJECT COMPLETION REPORT	1																															
	. Record of NBC review and rewrite																																
	. Lessons Learned																																
	. Follow up steps for improving the NBC																																

Annex 2: Bibliography

These national building codes, documents, and related studies helped to set the parameters for consultations and inform the support recommendations for consideration by PRIF development partners.

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ADB

Australian Aid

NEW ZEALAND
FOREIGN AFFAIRS & TRADE

European Union

European Investment Bank
The EU bank

JICA

WORLD BANK GROUP

PRIF

Pacific Region Infrastructure Facility