

Guideline to Preparing National Infrastructure Investment Plans



Pacific Region Infrastructure Facility

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Foreword

Reliable public infrastructure is one of the foundation stones of sustainable development in the Pacific. Almost all critical public services provided by governments and state-owned enterprises are built on the foundations provided by public infrastructure assets. For example, access to reliable energy requires a network of infrastructure assets to generate and distribute electricity to homes. Failure of any assets within that system results in an interruption to the service.

By their nature, most infrastructure assets require significant capital investment and generally have a long service life measured in decades. As such, capital budgets meant to expand, upgrade and renew these assets cannot be set on recurrent levels and require a medium- to long-term planning horizon.

The long-term horizon is supported through governments' 20- to 30-year vision statements, which lay out the development objectives for the nation. These generally cascade to sector-level strategic plans targeted toward the more specific demand for services across transport, energy, water, waste, telecommunications and other critical public service sectors supported by infrastructure.

National Infrastructure Investment Plans (NIIPs) identify and consolidate a pipeline of infrastructure projects across all sectors into a single plan. Projects are prioritized based on their alignment with strategic objectives to provide a list of high-priority projects for development. The NIIP then sets an investment plan to align these projects with potential sources of funding before more detailed economic appraisals and business cases are developed to support budget request submissions.

At the heart of a NIIP is the multi-criteria analysis (MCA) and prioritization framework, which emphasizes projects with the greatest potential impact on the achievement of national development objectives. Infrastructure needs are always likely to exceed available resources, and MCA and prioritization put scarce resources to the best use.

The preparation of a NIIP as a planning instrument is accompanied by efforts to strengthen the NIIP process as an integral component of the nation's planning and budgeting framework. Government leadership, integration with government systems, and capacity building are key objectives.

The Pacific Region Infrastructure Facility has been helping Pacific Island Countries (PICs) strengthen their infrastructure planning frameworks since 2010. Over this time, 11 PICs have implemented NIIPs, with several entering their second and third iterations.

The production of this *Guideline to Preparing National Infrastructure Investment Plans* is aimed at ensuring governments and their advisors have the tools and best practices to develop and maintain their infrastructure investment plans into the future.



About this Guide

The *Guideline to Preparing National Infrastructure Investment Plans* provides a useful reference for those involved in preparing, reviewing, or updating National Infrastructure Investment Plans (NIIPs) around the Pacific, and as a resource for encouraging best practice infrastructure investment planning.

The guideline outlines the key activities governments need to undertake when preparing a NIIP and highlights generally accepted best practices for each step in the process. It draws on and highlights case examples for past NIIPs, cross-cutting studies, and the specialist expertise of the authors.

The target audience for the guideline is Pacific Island governments and their technical advisers, who are looking to develop or improve their multi-sector investment planning through the NIIP framework.

The guideline is presented across three core sections:

SECTION I :

Introduction to National Infrastructure Investment Planning

This section presents an executive summary of why multi-sector infrastructure investment plans are important and answers some of the typical questions governments and infrastructure agencies have when embarking on the NIIP development journey.

SECTION II :

The Infrastructure Investment Planning Framework

This section introduces key terms and definitions and provides a summary of the core elements of the investment planning process.

SECTION III :

Best Practice Approach to Developing Infrastructure Investment Plans

This section provides practitioners and those compiling NIIPs with a knowledge product for each step in the process. It draws on case studies from recently completed NIIPs and references best-practice guidance from international and regional studies, manuals, and guidelines.



Abbreviations

ADB	Asian Development Bank
DFAT	Australian Department of Foreign Affairs and Trade
EIB	European Investment Bank
EU	European Union
GDP	Gross Domestic Product
GNI	Gross National Income
IIMM	International Infrastructure Management Manual
IMF	International Monetary Fund
IPWEA	Institute of Public Works Engineering Australasia
IRR	Internal Rate of Return
ISO	International Organization for Standards
JICA	Japan International Cooperation Agency
MCA	Multi-Criteria Analysis
MFAT	New Zealand Ministry of Foreign Affairs and Trade
MTEF	Medium-Term Expenditure Framework
NDS	National Development Strategy
NIIP	National Infrastructure Investment Plan
NPV	Net Present Value
PCN	Project Concept Note
PIC	Pacific Island Country
PIMA	Public Investment Management Assessment
PRIF	Pacific Region Infrastructure Facility
SDG	Sustainable Development Goal
SOE	State-Owned Enterprise
UNDP	United Nations Development Program
WBG	World Bank Group

SECTION I

Introduction to National Infrastructure Investment Planning

This section of the document presents a high-level summary of why multi-sector, multi-year investment plans for infrastructure are important and answers some of the typical questions governments and infrastructure agencies have when embarking on the NIIP development journey.

This section answers the following questions:

- I.1 What is a National Infrastructure Investment Plan?
- I.2 Where do NIIPs fit within the infrastructure delivery life cycle?
- I.3 What benefits can you expect to see?
- I.4 How will the approach help you deliver more robust planning decisions?
- I.5 How does the plan help you build resilience?
- I.6 Where have Infrastructure Investment Plans been delivered?
- I.7 What value have participants experienced?
- I.8 What is required to improve the infrastructure planning process?

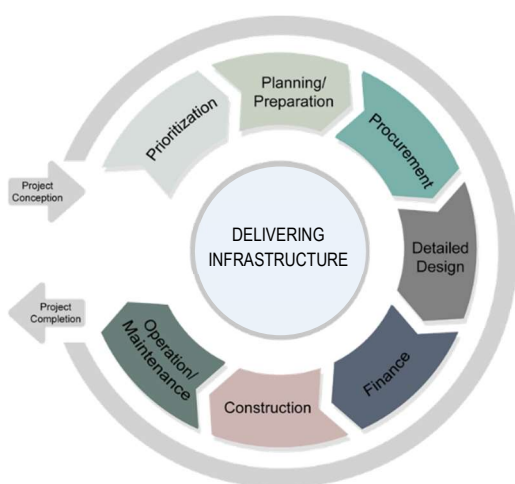


I.1

What is a National Infrastructure Investment Plan?

A National Infrastructure Investment Plan (NIIP) is a medium-term plan capturing the role of infrastructure in sustainable national development and setting the strategic direction for investment in infrastructure over a typically 10-year horizon.

Figure I.1. Infrastructure Delivery Lifecycle



Source: "Overview of Selected Sustainable Infrastructure Standards and Norms", Green Finance and Investment, OECD.

Role of Infrastructure

Infrastructure assets exist to provide a service to users, owners, and the community. For example, ports allow goods to be imported and exported, roads allow those goods to get to market, and power transmission lines allow those markets to operate. When infrastructure fails, these services are interrupted. Infrastructure assets also have a financial value; they cost money to acquire and maintain. Both the service value and financial value of infrastructure contribute to a community's overall wealth.

Reliable infrastructure is one of the foundation stones of sustainable development in the Pacific. All the important services provided by governments, and private sector ventures that create jobs and build wealth, are built on the foundations provided by infrastructure.

Planning for Infrastructure

Infrastructure often has a high cost, requires careful planning and multi-faceted design, and needs ongoing management and maintenance to deliver critical services (Figure I.1). This makes sound and transparent processes for project conception, prioritization and planning preparation crucial. The primary goal when developing a NIIP, is to strengthen this inception and planning phase but also to integrate it with government's supporting finance, procurement, and project management practices, all the while being conscious of ongoing operations and maintenance liabilities. It should not be forgotten that infrastructure that is poorly planned, implemented, and managed can be more of a burden than a benefit to the nation.

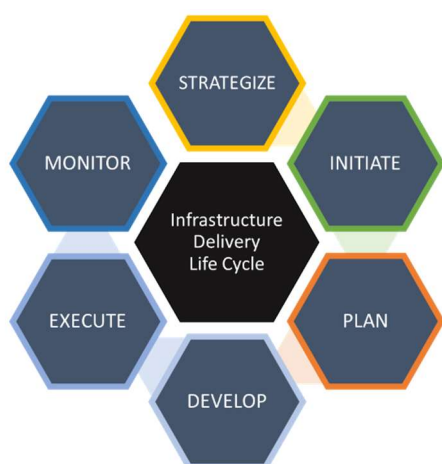
Multi-sector, Multi-year Investment Plans

A NIIP examines the infrastructure needs of all sectors, be they economic, social, or administrative in nature, drawing on the existing hierarchy of National Development Objectives, and sectoral and institutional plans. Candidate infrastructure investment projects are collated, screened, and prioritized across sectors in a systematic and transparent process. At the same time, an assessment is made of likely economic viability of projects and the capacity of government to fund and deliver the infrastructure investment program so it can be scaled appropriately.

I.2

Where do NIIPs fit within the infrastructure delivery life cycle?

Infrastructure investment plans strengthen the project inception and planning processes to provide a longer-term view of needs, and a clearer link between the planned projects and the strategic and economic goals of a nation.



Cascading Development Objectives

A NIIP aims to provide a clearer link between the strategic planning goals of a nation with the development objectives of a sector. It achieves this by having a longer-term (typically 10-year) view of infrastructure needs and ensuring the way projects are prioritized reflects the overarching goals and objectives (see Table I.1).

Planning Gateways

There are two decision gateways discussed in the context of the NIIP. The first, **Decision Point #1**, occurs between the Plan and Develop phases, based upon an analysis of the project’s merits, against national development goals and social, economic, and environmental criteria. Project concept notes provide the key information for this analysis and the MCA framework allows the results to be prioritized across sectors. The outcome from Decision Point #1 is a *“list of priority projects for further development”* – the NIIP is the **primary document supporting this decision point**.

Decision Point #2 comes between the Develop and Execute phases, once a more detailed business case and preliminary cost-benefit or cost-effectiveness analysis has been completed. This gateway locks down the scope and extent of the project and approval for funding based on achievement of key decision criteria.

Table I.1. Where NIIPs Help with Infrastructure Delivery (Strategy and Planning)

STRATEGIZE	INITIATE	PLAN	DEVELOP
Consider...	Review...	Introduce...	Integrate...
<ul style="list-style-type: none"> macroeconomic trends national vision and strategic goals historic expenditure 	<ul style="list-style-type: none"> sector and/or institutional plans asset management plans master plans 	<ul style="list-style-type: none"> project concept notes multi-criteria prioritization linking project priorities to investment strategy 	<ul style="list-style-type: none"> technical and economic assessment project and costing approval
to identify investment strategy and prioritization criteria.	to identify long-list of candidate projects for development.	to provide a prioritized list of justifiable investment opportunities.	to provide a seamless transition for 10-yr to 3-yr to 1-yr planning

NIIP = National Infrastructure Investment Plan.
Source: Authors.

I.3

What benefits can you expect to see?

A NIIP identifies priorities for major investments in infrastructure, seeking out those investments with the greatest potential impact on the achievement of national development objectives, within the resource constraints facing the nation.

“The NIIP process has allowed us to strengthen the strategic alignment with national and sectoral plans and provided an opportunity to review and improve governments governance and budget planning systems.”

Vasie Ngatoko-Poila

General Manager, Asset Management
Cook Islands Investment Corporation

Primary Objectives

The primary aim of a NIIP is to guide efficient government infrastructure investments that meet a country’s socio-economic development objectives over a 10-year horizon.

A NIIP identifies clear priorities for infrastructure investments and the economic viability of projects, and improves the alignment of investments with available resources. These efforts in turn can ensure that the impacts of investments are maximized. Moreover, in an environment of heavy dependence on development assistance, good planning can secure more timely and reliable commitments of development partner resources, thereby supporting efficient aid delivery and improved investment completion.

Benefit of Infrastructure Investment Plans

A best practice approach to developing multi-year capital investment plans will yield many benefits to PIC governments and their communities:

- Attention is given to long-term solutions rather than short-term affordability or convenience.
- Transparent decision making on strategic investments ensures greater public confidence.
- Economic sustainability is enhanced through the careful planning and prioritization of projects.
- Decision making frameworks allow investments to be prioritized across disparate, multi-sector projects.
- Active engagement of key infrastructure agencies in scheduling and prioritizing investments across sectors.
- Prioritization frameworks contribute to the achievement of national and international development agendas and goals, including the Sustainable Development Goals (SDGs).
- Communication is more effective with development partners and potential public or private investors because plans and results are documented and shared. NIIPs provide an important resource for roundtable meetings with development partners, and feed into country strategy papers for particular partner programs.
- The public enjoy better, more dependable services without unexpected failures or indefinite interruptions.
- Online publication of NIIPs and dissemination to key stakeholders raises the profile of critical infrastructure issues.

I.4

How will the approach help you deliver more robust planning decisions?

Deeper thinking around the costs and impact of infrastructure projects early in the planning cycle, along with a systematic and collaborative prioritization process leads to more transparent investment decisions and greater levels of public and private sector support.

Project Concept Notes

Project Concept Notes (PCNs) help government departments document a brief business case justification for future investments. They capture key project information to support more robust investment decisions. While these vary from country to country and could utilize existing formats or formats specifically developed for NIIP, concept notes generally capture a project's:

- a) Purpose and alignment with national priorities
- b) Budget and forecast expenditure
- c) Complexity and resource requirements
- d) Benefits and impact assessment
- e) Maintenance and sustainability considerations
- f) Roles and responsibilities for delivery

Deeper thinking and stronger documentation of infrastructure projects early in the planning cycle leads to better investment decisions.

Multi-Criteria Analysis

At the heart of a NIIP is the MCA framework. Prioritization of candidate infrastructure projects focuses planning activity on the projects with the greatest potential impact on the achievement of national development objectives. Infrastructure needs tend to exceed available resources, and prioritization puts scarce resources to the best use. Selected criteria normally cover economic, social, and environmental impacts, and are often supplemented with other criteria relevant to project appraisal. Table I.2 below is a set of typical MCA criteria drawn from a review of previous NIIPs:

Table I.2. Typical MCA Prioritization Criteria (refer Section III.4.2)

Criteria Group	Typical Criteria
Economic impact	<ul style="list-style-type: none"> ▪ Potential for economic viability ▪ Ability to meet ongoing costs of operation and maintenance ▪ Impact on development of the private sector
Social Impact	<ul style="list-style-type: none"> ▪ Impact on quality or coverage of social services (education, health, community) ▪ Impact on regional development ▪ Impact on good governance
Environmental Impact	<ul style="list-style-type: none"> ▪ Contribution to climate change adaptation / disaster risk management ▪ Resilience of the project to climate change / natural disasters ▪ Impact on the environment
Alignment and Performance	<ul style="list-style-type: none"> ▪ Linkages with other infrastructure ▪ Optimal use of existing infrastructure ▪ Urgency of the project (consequences if project does not proceed)

MCA = multi-criteria analysis.

Source: Authors.

I.5

How does the plan help you build resilience?

A NIIP provides a 10-year forecast of capital infrastructure investments (proposed project pipeline) and prioritizes these based on weighted economic, social and environmental criteria. “Resilience” can be considered within each of these three categories.

“Infrastructure provides the backbone for all of government's important services and the private sector ventures that employ our people and create wealth for our nation. We need to build resilient infrastructure and need to follow this up with proper maintenance. In this way, we will get value for money from our infrastructure.”

Ma'u Leha

Deputy Secretary
National Planning Division
Ministry of Finance, Tonga

Environmental Resilience

The effects of climate change and planning for climate mitigation and adaptation are cross-cutting issues that impact many infrastructure projects. Focus on climate change mitigation and adaptation has increased in recent years, alongside global efforts on greenhouse gas emissions and increased understanding of the costs and benefits of mitigation and adaptation measures.

Three aspects of the NIIP assist governments to be more resilient to climate change and natural disasters and to ensure the environment is protected:

- 1) Projects are prioritized based on their contribution to climate adaptation, resilience to natural disasters, and overall environmental impact.
- 2) The review of climate funding opportunities identifies sources (e.g., Green Climate Fund, Adaptation Fund, and Climate Investment Fund) and aligns candidate projects accordingly.
- 3) The 10-year pipeline and associated concept notes allow early engagement with fund providers to discuss and refine project briefs to best align their objectives with the needs of government.

Economic Resilience

Two aspects of the NIIP assist governments to be more economically resilient:

- 1) Projects are prioritized based not only on the economic benefits they deliver, but also on how sustainable the infrastructure is (e.g., can the ongoing operation and maintenance costs be met by user charges).
- 2) A review of funding opportunities is included within the NIIP to ensure the 10-year infrastructure program budgets are within sustainable funding envelopes.

Social Resilience

In addition to environmental and economic criteria, the MCA ranks projects based on their benefit to the community (e.g., social services, regional development, accessibility, and equality).

I.6

Where have NIIPs been delivered?

Between 2010 and 2020, nine countries have requested Pacific Region Infrastructure Facility (PRIF) national planning support and seven to help develop National Infrastructure Investment Plans.

PRIF Phase I (2010–2013)

During Phase I, infrastructure plans were a relatively new concept among government officials. Given the limited capacity of government department staff, the plans were developed by consultants, including locals when possible. The largely qualitative prioritization process was developed and conducted by the consultants with high-level government officials. The output of the assistance was the NIIP report, which included a list of prioritized economic infrastructure projects in different stages of project readiness.

PRIF Phase II (2014–2016)

In Phase II, the NIIP as a product started to adapt to the now increased capacity. Some countries included social infrastructure in the NIIPs and were interested in participating actively in the development and implementation of a more quantitative prioritization process. Some countries like Tonga and Nauru went through the NIIP development process again, gaining more knowledge in the process and consolidating their capacity even further.

PRIF Phase III (2017–2019)

In Phase III, PRIF initiated more discussions on public investment management and how existing infrastructure must be considered. PRIF also broadened its assistance to support more sophisticated and capable government resources who were now eager to own and manage every step of the process (see Table I.3).

Table I.3. Development of NIIPs across the Pacific

Phase I (2010–2013)	Phase II (2014–2016)	Phase III (2017–2019)	Phase IV (2020–2023)
<ul style="list-style-type: none"> ▪ Tonga NIIP ▪ Nauru NEISIP ▪ Samoa NISP ▪ Tuvalu TISIP 	<ul style="list-style-type: none"> ▪ Tonga NIIP Review ▪ Nauru NEISIP Review ▪ Samoa NISP Review ▪ Cook Islands NIIP ▪ Vanuatu VISIP ▪ RMI NIIP Framework ▪ Samoa Transport Medium-term Economic Framework 	<ul style="list-style-type: none"> ▪ Tonga NIIP Update ▪ Nauru NEISIP Update ▪ Cook Islands NIIP Update ▪ Tuvalu ISIP Update ▪ Tuvalu Asset Management Framework ▪ Solomon Is. Public Investment Management Diagnostic ▪ Solomon Is. Priority Investment Plan ▪ Fiji Asset Management Framework ▪ Kiribati Public Investment Management Assessment ▪ Niue Transport Sector Plan 	<p>A comprehensive Program of NIIPs ongoing:</p> <ul style="list-style-type: none"> ▪ Tuvalu ▪ Tonga ▪ Palau ▪ Cook Islands ▪ Kiribati ▪ Fiji ▪ Solomon Islands ▪ Niue ▪ Vanuatu ▪ Samoa

Source: Pacific Region Infrastructure Facility, 2021.

I.7

What value have participants experienced?

Participants engaged in the development of recent NIIPs were invited to provide feedback on their experience and offer any insight and lessons learned on the process.

Key Areas of Value

Participants were asked to rate those areas of the NIIP that delivered the most value to government. The top five, rated as “Very Important” or “Important” by participants were (in order of priority):

1. A consolidated list of all infrastructure projects planned for development over the next 5–10 years.
2. Active participation of multiple agencies in a coordinated national planning process.
3. Objective prioritization criteria which allow the comparison of projects across multiple sectors
4. A transparent planning process which supports and strengthens our project management practices.
5. A list of our high priority infrastructure projects prioritized for further development.

Other Insights

Other identified benefits were:

- Strengthened alignment of planned projects with national strategic objectives and key performance indicators.
- Allowed government and development partners to easily identify key infrastructure projects and priority areas for funding.
- Provided an opportunity to review and improve governance and budget planning systems.
- Strengthened strategic alliances and commitment to the plan across government, the private sector, and development partners.

Overall, the feedback from governments who have participated in NIIP development has been overwhelmingly positive.

Lessons Learned

Since 2010, 11 PICs have fully or partially implemented NIIPs; some have invested in second or third iterations of the plan. Over this time, some common themes for success have emerged; these “lessons learned” or “success factors” are provided below:

KEY SUCCESS FACTORS

- 1. Clear Ownership of the Plan**

Preparing the NIIP is not a consulting study; rather, it is collaboration between infrastructure agencies to consolidate a centralized list of projects which can be prioritized against the nation's strategic goals. For this to be successful, there must be strong leadership support and governance structures in place (e.g., a coordinating unit and steering committee).
- 2. Rolling Infrastructure Program**

The 10-year pipeline of projects needs to be maintained in a structured database and kept up to date to ensure its sustainability. A lead coordination unit needs to own this task and the multi-sector steering committee needs to have a standing agenda item to assess this list at least annually.
- 3. Integration with Planning and Budget Process**

The NIIP delivers a 10-year pipeline of projects that identifies high priority areas for investment. This pipeline needs to be updated annually and integrated with the medium-term and annual budget processes.
- 4. Regular Review of Priorities**

The MCA is based on the best information available at the time. From year to year, more information emerges about project impacts, especially those in the 3- to 10-year horizon, and priorities can change (e.g., pandemic or natural disaster response). It is therefore necessary for the coordination unit and steering committee to review the priority list of projects feeding the medium-term budget every year or two.
- 5. Business Case Development and Approval for Funding**

NIIPs provide a superficial assessment of the economic, social, and environmental impact a project is likely to deliver. As priority projects get closer to approval for funding horizon it is important that the project concept notes feed a deeper evaluation of these impacts – in particular an evaluation of a project's economic viability.

I.8

What will improve the infrastructure planning process?

The NIIP journey since 2010 has been a learning experience for both Pacific Island governments and PRIF—both have contributed, and both have learned. The result has been a marked improvement in infrastructure planning and management, bearing in mind that the publication of a NIIP is an early step in a wider journey to improve returns from infrastructure. The following five themes anchor NIIP in efforts to strengthen the infrastructure planning process.

“The NIIP is an important document that outlines the nation’s infrastructure priorities over the next 10 years, an important strategy which guides government and the private sector.”

Allan Jensen
CEO
Cook Islands Investment Corporation

1. Understand the current system

Carrying out a brief diagnostic of the current infrastructure planning system is a way to identify its strengths and opportunities for improvement. For example, the Public Investment Management Assessment (PIMA) methodology uses a questionnaire to assess key elements of infrastructure delivery (including the inception and planning phase). At a minimum, we need to know how potential investments currently move through the project cycle, and how they are managed collectively as an infrastructure pipeline.

2. Recognize what a NIIP can offer

Preparation of an NIIP adds value to infrastructure planning through reviewing sector policy and performance on a consistent basis, introducing an objective and transparent approach to cross-sector prioritization, early identification of economic viability, and adding a focus on key cross-cutting issues such as asset management and resilience in the face of climate change, pandemics, and natural disasters.

3. Mainstream NIIP with current systems

Knowing the current system and what a NIIP has to offer, the NIIP implementation can be designed to add value to the current system and avoid standing apart from that system. There is a focus on developing an ongoing project pipeline including NIIP projects. An indicator of success in this regard is the avoidance of NIIP-specific processes, formats, and templates where suitable equivalents already exist or could be adapted to serve the desired function.

4. Strengthen asset management systems

A strong asset management system including regular asset condition assessments is essential in planning asset maintenance, rehabilitation, and eventual renewal. In many countries, asset registers currently have a focus on financial reporting and control, and support is needed for agencies to develop asset management systems more suitable for infrastructure planning.

5. Build capacity in infrastructure planning

Skills need to be developed at all stages of the project cycle including project identification, preparation, appraisal, monitoring of implementation, and evaluation. Systems needed to support these skills include a project database providing capacity to manage the project pipeline.

SECTION II

The Infrastructure Investment Planning Framework

This section introduces terms and definitions and summarizes the core elements of the multi-sector, multi-year investment planning process to be elaborated on in Section III.

This section includes:

- II.1 Core Elements of the Investment Planning Process
- II.2 Projects and Sectors for Inclusion
- II.3 Plan Layout and Content



II.1

Core Elements of the Investment Planning Process

Eight recent NIIPs were studied to identify the core elements of the plans.

1.1 Review of Recently Published NIIPs

Section I.6 (Table I.3) summarizes the countries who have completed NIIPs since 2011 and the evolution of the NIIPs in those countries. Of these, we have reviewed the format and content of the most recent publications to identify common elements. The documents reviewed were:

1. National Infrastructure Strategic Plan (Samoa, 2011)
2. Infrastructure Strategic Investment Plan 2015–2024 (Vanuatu, 2015)
3. Infrastructure Strategy and Investment Plan (Tuvalu, 2016)
4. Integrated Infrastructure Strategic Plan (Nauru, 2019)
5. National Infrastructure Investment Plan 2021–2030 (Palau, 2021)
6. Priority Infrastructure Investment Pipeline (Solomon Islands, 2021)
7. National Infrastructure Investment Plan (NIIP 3) (Tonga, 2021)
8. National Infrastructure Investment Plan (Cook Islands, 2021)

The aim of the review was to identify best practices across the Pacific and find the core elements of the multi-year multi-sector infrastructure investment planning process that culminates in a NIIP.

NIIPs have historically been delivered by a small pool of consultants and technical advisors. While they have been engaged under similar terms of reference, the variable maturity of project planning across countries, the particular focus of governments at the time, and a general advancement in thinking from year to year, has led to some variations in the content of each NIIP.

Table II.1 provides a high-level summary of the most recent NIIPs published by PRIF.

Table II.1. Review of Different Elements Seen across Recent Pacific Island NIIPs

Characteristic	Country Code								Description
	WSM	VUT	TUV	NRU	PLW	SLB	TON	COK	
Document Statistics									
Year published	2011	2015	2016	2019	2021	2021	2021	2021	most recent/relevant
No. pages (body)	33	106	50	62	74	25	75	43	
No. pages (total)	96	204	88	260	88	54	167	65+	including appendices
Plan timeframe (years)	5+	10	10	10+	10	10	10	10	
Sectors Covered									
Roads	●	●	●	●	●	●	●	●	
Ports/Maritime	●	●	●	●	●	●	●	●	
Airports	●	●	●	●	●	●	●	●	
Energy	●	●	●	●	●	●	●	●	
Water/Sanitation	●	●	●	●	●	●	●	●	
Solid Waste	●	●	●	●	●	●	●	●	
Telecommunications/ICT	●	●	●	●	●	●	●	●	
Health	-	●	●	●	●	●	●	●	
Education	-	●	-	●	●	●	●	●	
Gov. Buildings/Facilities	-	●	●	●	●	●	●	●	
Agriculture/Forestry	-	●	-	●	●	●	●	-	
Fisheries	-	-	-	●	●	●	●	-	
Coastal/River Protection	-	-	●	●	-	-	●	●	
Other	-	●	-	●	●	●	●	-	
Project Attributes									
No. projects (long list)	66	80	23	53	68	59	146	127	candidate long-list
Budget	○	●	●	●	●	●	●	●	budget assigned
Expenditure forecast	●	●	●	●	○	○	●	●	timing of spend
O&M implications	-	●	●	●	●	○	●	-	O&M at project level
Economic evaluation	○	○	○	○	○	○	○	○	lifecycle benefit-cost
Funding source	○	●	●	●	○	●	●	○	source identified
NIIP Content									
Strategic direction	●	●	●	●	●	○	●	●	drivers for projects
Sector level demand	●	●	○	○	●	-	●	○	sector priorities
Funding strategy	●	●	●	●	●	○	●	○	
List of future projects	○	●	●	●	●	●	●	●	
Ranking of projects	-	●	●	●	●	●	●	○	
Maintenance implications	○	●	●	●	●	○	●	○	impact assessed
Improvement plan	-	○	○	○	-	-	●	●	embedding NIIP

Characteristic	Country Code								Description
	WSM	VUT	TUV	NRU	PLW	SLB	TON	COK	
Multi-criteria Analysis									
No. of variables									
Social	1	2	3	4	4	8	2	1	
Economic	2	3	3	3	3	9	5	1	
Environmental	2	2	3	2	1	2	2	1	
Complexity/Scale	-	2	1	1	-	3	1	1	
Ongoing sustainability	-	1	2	3	-	3	2	1	
Strategy alignment	-	1	<i>linked</i>	1	<i>linked</i>	5	2	-	
Other	2	1	-	2	-	2	1	1	
Total	7	13	12	16	8	32	15	6	

“●” Characteristic present, “○” Characteristic partially present, “-” Characteristic absent.

WSM - Samoa, SLB - Solomon Islands, VUT - Vanuatu, NRU - Nauru, TUV - Tuvalu, PLW - Palau, TON - Tonga, COK - Cook Islands
 ICT = information and communication technology, O&M = operations and maintenance.

Source: Author's review of NIIPs.

In completing the comparative assessment of NIIPs, the following general observations are noted:

Sectors Covered

- Earlier NIIPs were focused on the core infrastructure sectors (utilities, transport, and waste). As processes have matured there has been a desire to cover a much broader range of sectors. The most recent Tonga NIIP identified infrastructure projects across more than 25 sectors.

Project Details

- The NIIPs typically identify candidate infrastructure projects over a 10-year timeframe. Earlier NIIPs were a little light on years 5–10 but as maturity has developed, we see a greater number of projects in the NIIPs and more balance of volume across the 10-year horizon.
- As support for NIIPs has grown, we typically see a greater number of candidate projects being identified across a broader range of sectors. Earlier NIIPs had observed gaps in coverage (e.g., a bias toward a particular sector or island group).
- Given the time horizon of NIIPs, not all projects identified have sufficient information to complete robust economic cost-benefit analysis. However, the MCA ranking criteria typically assess impact and cost/scale.
- While all projects identified in the NIIPs have a capital cost estimate, not all have an estimate of the ongoing operations and management burden.

Multi-criteria Analysis

- While all NIIPs utilize an MCA assessment, the criteria and approach to the assessment vary. On the MCA variables alone, we see anywhere from six to 32 criteria being assessed to determine the relative priority of a project. However, we do see greater commonality across the criteria groups/objectives covering economic, environmental, and social impacts, and operational readiness.
- There is an observed trend of assessment criteria focusing largely on benefits in the early years to a more balanced consideration of benefits and costs.
- Another recent trend is to recast criteria and scoring to avoid an inherent bias in favor of large projects, e.g., considering capital cost per job created rather than the number of jobs created.
- Most NIIPs weight each criterion/objective to give an average weighted score for the project.
- The recent Cook Islands and Solomon Islands NIIPs separate impact/benefit criteria from scale/cost criteria and plot projects on a dual axis to assist with balancing the final program with high-cost, high-impact (major) projects and smaller low-cost, high-impact (quick win) projects.

1.2 Project Delivery Life Cycle

There are many project management frameworks that define the stages and gateways (approvals) a project moves through over its life. In describing the NIIP context, we have settled on Figure II.1.

Figure II.1. Key Stages in the Life Cycle of a Project



Source: Author's review of project management frameworks.

The first three stages are those the NIIP looks to improve by:

1. Providing a clearer link between national, sector and corporate strategic objectives and the way we prioritize investments to reflect those development objectives.
2. Engaging with multi-sector agencies to gather a consolidated view of sector priorities and the pipeline of projects planned within those sectors.
3. Applying a greater rigor to the way we define and screen candidate projects.
4. Identifying priority projects using a multi-criterial prioritization approach.
5. Increasing the planning horizon from setting near-term budgets (1–3 year) to achieving and aligning with medium-term (5–10 year) goals (see Table II.2).

Table II.2. The Role of NIIPs in Linking Strategy to Planning Priorities

STRATEGIZE	INITIATE	PLAN	DEVELOP
Consider...	Review...	Introduce...	Integrate...
<ul style="list-style-type: none"> ▪ macroeconomic trends ▪ national vision and strategic goals ▪ historic expenditure 	<ul style="list-style-type: none"> ▪ sector and/or institutional plans ▪ asset management plans ▪ master plans 	<ul style="list-style-type: none"> ▪ project concept notes ▪ multi-criteria prioritization ▪ linking project priorities to investment strategy 	<ul style="list-style-type: none"> ▪ technical and economic analysis ▪ project and costing approval
to identify investment strategy and prioritization criteria.	to identify long-list of candidate projects for development.	to provide a prioritized list of justifiable investment opportunities.	to provide a seamless transition for 10-yr to 3-yr to 1-yr horizons.

NIIP = National Infrastructure Investment Plan.

Source: Authors.

1.3 Process Steps for Formulating a NIIP

Based on a review of past NIIPs, their formulation can be described in eight key steps (Table II.3).

Table II.3. The Eight Steps to Formulate a National Infrastructure Investment Plan

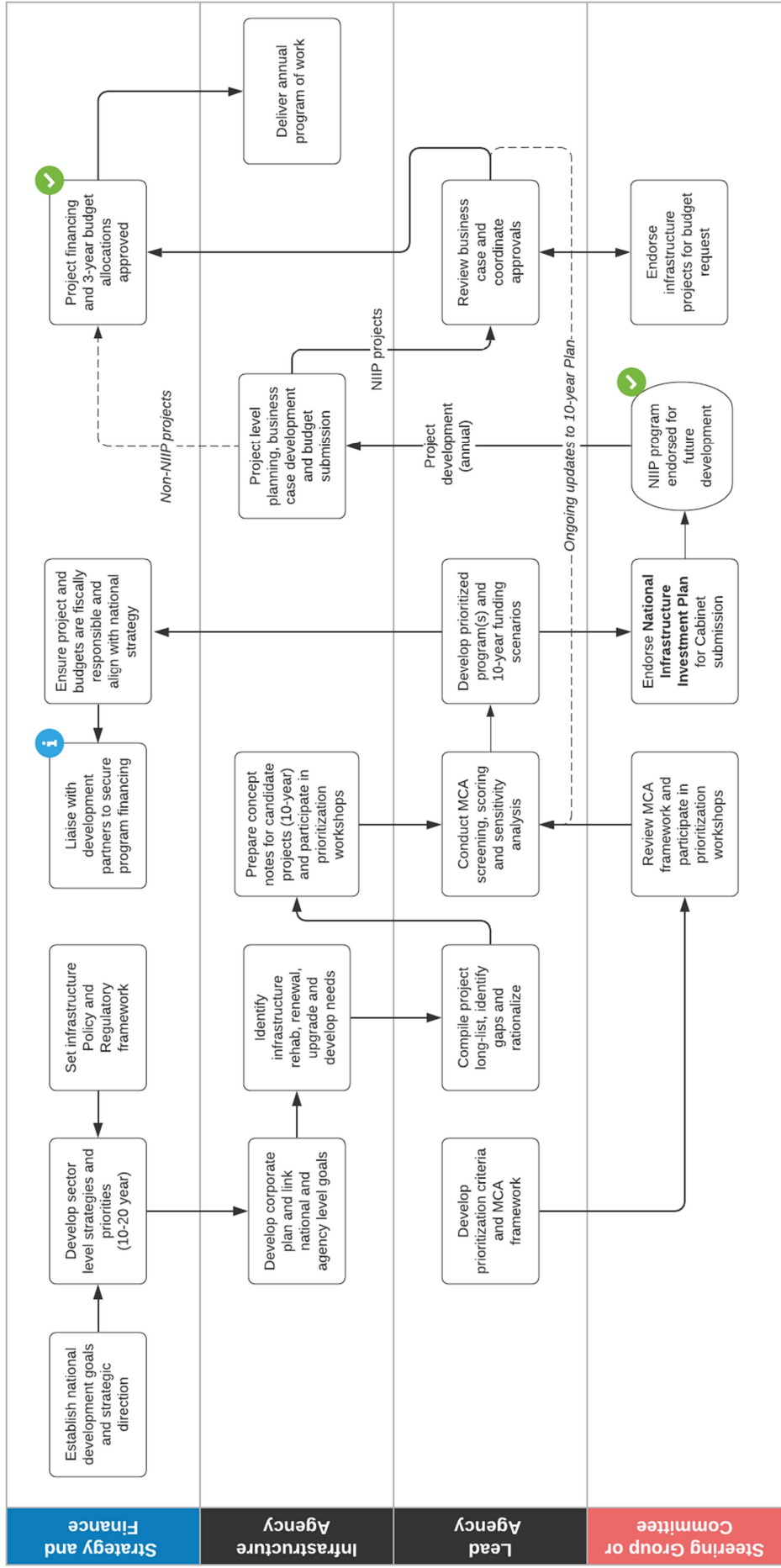
Step 1	Establish Enabling Environment	<ul style="list-style-type: none"> ▪ Define role of NIIP in project planning lifecycle ▪ Establish governance environment
Step 2	Review Funding and Investment Strategy	<ul style="list-style-type: none"> ▪ Review economic environment ▪ Identify sources of funding ▪ Assess historic investment levels ▪ Determine investment strategy and funding thresholds ▪ Establish linkages to the budget cycle
Step 3	Determine Infrastructure Priorities	<ul style="list-style-type: none"> ▪ Assess implications of National Development Strategy(s) and policy direction ▪ Assess implications of sector, corporate, and asset level plans ▪ Identify and address any gaps in coverage by sectors (sector overviews)
Step 4	Develop Prioritization Framework	<ul style="list-style-type: none"> ▪ Set up the MCA framework ▪ Identify core assessment criteria to reflect national development objectives, economic/environmental/social impacts, and project readiness
Step 5	Assemble Long-List of Candidate Projects	<ul style="list-style-type: none"> ▪ Identify and categorize projects ▪ Compile project list(s) ▪ Identify any significant gaps in coverage of long list
Step 6	Develop Project Concept Notes and Screen Projects	<ul style="list-style-type: none"> ▪ Categorize infrastructure projects ▪ Develop project concept notes ▪ Populate project attributes and assess economic viability
Step 7	Conduct Multi-Criteria Prioritization	<ul style="list-style-type: none"> ▪ Conduct MCA screening, scoring and sensitivity analysis ▪ Review project impact ranking ▪ Ratify MCA and output program ▪ Prepare NIIP ▪ Endorse NIIP
Step 8	Ongoing Management	<ul style="list-style-type: none"> ▪ Formal approval of projects for funding ▪ Take prioritized projects forward ▪ Sustain the NIIP ▪ Mid-term reviews and improvement plan

MCA = Multi-criteria analysis, NIIP = National Infrastructure Investment Plan.

Note: The core stakeholder roles and responsibilities for delivering the steps above, are presented in Section II.1.4 below.

Source: Authors.

Discussion and a best practice approach for each step in the process (above) are included in **Section III**, along with case examples extracted from past NIIPs. It is also useful for the reader to understand where the NIIP fits in the overall process of project implementation from setting the strategic direction for the country and its infrastructure, through to approving projects for construction.



Source: Authors

Figure II.2. How NIIPs integrate with strategic and project-level outcomes

1.4 Roles and Responsibilities

In early iterations, NIIPs were largely a consultant-led activity to assemble a list of known infrastructure projects and facilitate a prioritization process. However, as the NIIP formulation process has evolved, so too have the roles and responsibilities of key stakeholders in **formulating the NIIP and managing the delivery of the program** post-publication.

Infrastructure Agency

These are the entities who submit infrastructure projects for inclusion in the NIIP. Largely, they are the entities utilizing the infrastructure to deliver a service (e.g., a power authority), but for some sectors, the responsibility for infrastructure projects falls to a central agency (e.g., government buildings). State-owned Enterprises (SOEs) and Trading Enterprises wholly owned by government are included herein as their infrastructure is considered a public asset, either through a lease agreement or through legislated responsibility for its preservation. The role of infrastructure agencies is to:

- Understand overarching government policy and strategy and assess the role infrastructure plays in service delivery
- Identify future infrastructure rehabilitation, renewal, upgrade and development needs
- Prepare scope and budgets and submit capital project forecasts
- Populate concept notes for candidate NIIP projects
- Participate in prioritization process/workshop
- Manage the delivery of projects

Coordination Unit/Department

This is the entity responsible for compiling the NIIP and managing its process, including any consultants. The role is normally assigned to a central planning department within the Finance or Planning Ministries. The role of the coordination unit/department is to:

- Develop prioritization frameworks
- Liaison with infrastructure agencies to compile project long-list
- Screen projects and assembling concept notes for candidate projects
- Facilitate of prioritization workshop(s)
- Report to infrastructure committee

Infrastructure Committee or Steering Group

This is the committee that owns the final product and champions its endorsement by government. It will typically have a chair and include representation from financial, policy, and infrastructure agencies. Ideally the committee will have some degree of legislated authority to coordinate the NIIP. The role of the infrastructure committee is to:

- Conduct technical prioritization and feasibility review of projects
- Monitor the implementation of the NIIP
- Ensure capital infrastructure program achieves national objectives
- Review resource and budget requirements to ensure the program is achievable
- Periodically report to cabinet on the program's progress
- Assist in resolving project roadblocks

Private Sector Companies

While private sector assets are not included in the NIIP (e.g., airline, shipping, quarry, asphalt, cellular providers, etc.) as they are not considered public assets and are not funded from

government revenue, leaders within the private sector can be engaged during the NIIP process. The role of the private sector is to:

- Assist with scoping pipeline projects (where appropriate) given their unique on island expertise and knowledge of the supply chain
- Participate in consultations and validation workshops related to project prioritization, often via representation from the Chamber of Commerce or a similar organization
- Assist with commercial aspects and assessing the economic impact of projects in their respective field of expertise. This may be particularly relevant for the likes of telecommunications and shipping where there is an overlap of public and private services
- Provide direction to government on potential opportunities for alternative funding for pipeline projects through public-private partnership arrangements

Development Partners

Development banks, the private sector, and international aid agencies all have a role in funding infrastructure across the Pacific. It is important that this financial assistance supports projects that align with national priorities and strategic goals. As such, we would expect these partners to be engaged during the NIIP process. The role of these financial partners is to:

- Liaise with governments to identify pipeline projects in the long list that align with their institutional investment priorities
- Ensure the resulting infrastructure is sustainable and investment decisions are robust

Finance Ministry

Governments' fiscal responsibilities ultimately lie with their Finance and Economic Development Ministry. The role of this Ministry is to:

- Ensure projects are aligned with national priorities and help to achieve prosperity goal
- Work with Infrastructure Committee to set investment envelopes/thresholds for 5–10 years
- Work with Infrastructure Committee to ensure projects are economically sound and that the whole-of-life operational and maintenance costs are accounted for
- Monitor debt levels and ensure fiscal responsibility with loans and investment decisions
- Liaise with development partners to secure mutually advantageous investment conditions

II.2 Projects and Sectors for Inclusion

While the terms “infrastructure asset” and “infrastructure investment” are used extensively throughout this publication, it is more common for NIIPs to now include capital projects (and studies) that replace, renew, or construct high-value public assets including specialist equipment and plants.

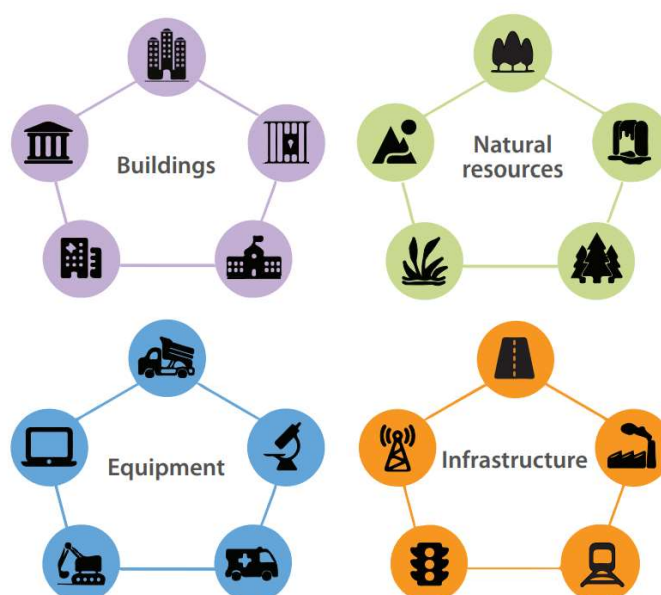
The focus of NIIPs are the sectors that benefit most from them, i.e., those whose main asset base is **physical infrastructure and buildings** (Refer Figure II.3).

2.1 High-value Public Assets

Assets can belong to private or public organizations. They can be tangible, meaning that they are physical and can be touched, or they can be intangible like financial assets. Physical public assets are tangible assets (like physical infrastructure, buildings, equipment, property and natural assets) that are owned and/or managed by the government.

The United Nations handbook for managing infrastructure assets groups **public assets** into four categories: Buildings, Equipment, Natural resources, and Infrastructure (Figure II.3).

Figure II.3. Public Assets



Source: *Managing Infrastructure Assets for Sustainable Development: A Handbook for Local and National Governments*, United Nations, 2021.

Typically, traditional transport and utility infrastructure sectors have a high proportion of long-life, high-value fixed assets such as transmission lines, bridges, wharves, pipelines, and roads. This was the primary purpose for creating NIIPs, i.e., to help governments plan capital projects to protect and expand this high-value, built infrastructure.

As processes have developed and support for NIIPs has grown, we now see other high-value public sector assets being included such as buildings, vessels, and major hospital equipment.

In this publication, which is aimed at all levels of government, we use the terms “infrastructure asset”, “public asset”, and “government asset” interchangeably. We define them as all the physical assets that are essential to the delivery of basic public services and are owned or managed by the local or central government (including SOEs).

2.2 Sectors for Inclusion

As discussed in **Section II.1**, the projects included within NIIPs have expanded beyond the traditional transport (roads, maritime, airports) and utility (energy, water, sanitation, telecommunications) sectors to also include sectors with high-value public assets (e.g., health, education, agriculture, forestry, and fisheries). Table II.4 lists some of the typical public assets which would be covered by a NIIP. This will vary from country to country, and it will be the role of the lead agency to define the final extent during the scoping phase.

Table II.4. Typical Public Assets and Sectors Included in an NIIP

Sector	Example of Major Assets in Sector
Transportation	
Roads	Earthworks, sealed roads, unsealed roads, footpaths, streetlight lights, roadside drains, bridges, culverts, retaining walls...
Airports	Runways, taxiways, aprons, terminals, navigation aids, runway lighting, weather stations, control systems, fueling systems...
Ports	Wharfs, facilities, jetties, navigation aids, tugs, container yards, cranes, dredges...
Utilities	
Water and Sanitation	Pipelines, laterals, wells, dams, storage tanks, water and wastewater treatment plants, pumping stations...
Energy	Diesel engines, hydro turbines, generators, transformers, solar farms, fuel stations, telemetry equipment, transmission/distribution lines...
Solid Waste	Dump sites, weigh bridges, medical waste incinerators, hazardous waste facilities, refuse collection centers...
Telecommunications	Towers, landing stations, lines...
Other	
Health	Buildings (hospitals, medical centers) and potentially high-value specialist equipment (ultrasound, arthroscope, generators) ...
Education	Buildings (schools, administration) ...
Public Administration	Buildings (court houses, parliament, government offices) ...
Agriculture and Forestry	Buildings, harvesting equipment, irrigation systems...
Coastal and River Protection	Coastal armoring, river erosion embankments, seawalls, flood gates ...
Fisheries	Buildings (processing facilities, storage), wharfs, vessels...

Source: Authors.

Other sectors found in some NIIPs include public housing, tourism, trade and enterprise, land and natural resources, and environment.

2.3 Projects for Inclusion

When determining what public asset projects should be included in a NIIP, the definitions vary from country to country but generally include a **physical value threshold** proportional to the country’s infrastructure spend/scale.

The Cook Islands NIIP included all capital infrastructure projects over NZ\$300,000 (US\$200,000) and any feasibility studies or master plans for future infrastructure. Palau used a similar threshold of NZ\$250,000 while Tonga with a larger economy set a threshold of >T\$1million (US\$440,000) and Solomon Islands had a higher threshold again of >SI\$10million (US\$1.2million).

Capital value alone is not the only guide for identifying candidate projects for NIIPs. As NIIPs have matured, we have seen a broadening of their purview to include not just new build projects but also rehabilitation and renewal projects. The Cook Islands NIIP provides a useful summary of the types of investment projects and how they can be categorized (Table II.5; Example 1).

Table II.5a. Categorizing Projects in a NIIP (Example 1)

Project Type	Definition	Drivers
Study	Feasibility studies and master plans for major public assets.	
Renewal	Works which return an existing asset to its as-new condition. Generally replacing like with like.	<ul style="list-style-type: none"> a) Asset has become unreliable or obsolete b) Asset has reached the end of its economic life (i.e., cheaper to renew than maintain) c) Asset is at risk of failing or poses a serious safety concern, etc.
Upgrade	Works required to improve existing infrastructure to meet increasing demand or improved levels of service.	<ul style="list-style-type: none"> a) Additional capacity required to meet demand b) Asset no longer meets service level requirements c) Improvement needed to meet new regulations or standards, etc.
New	Works required to expand the network or deliver a new service.	<ul style="list-style-type: none"> a) New assets required to deliver wider services b) New assets required to deliver a new service

Source: National Infrastructure Investment Plan, Cook Islands (2021).

The Nauru NIIP (2019) uses a similar classification methodology (rehabilitate, upgrade, new) but since it also includes major plant, equipment and vehicles in its pipeline, it also has a project classification category for these assets – assuming most projects in this category are for the procurement of new “infrastructure equipment or vehicles” assets (Table II.5; Example 2).

Table II.5b. Categorizing Projects in an NIIP (Example 2)

Project Type	Definition
Type R	infrastructure rehabilitation, which aims to rehabilitate buildings and civil works infrastructure such as roads, runway, and sea protection walls to original design and functionality.
Type U	infrastructure upgrading, which aims to improve similar types of civil infrastructure beyond its original design to adapt to evolving standards and include additional functionalities to avoid technical obsolescence.
Type N	new infrastructure, which is greenfield, new public infrastructure, mostly large and development-partner driven.
Type IEV	mostly, but not exclusively, infrastructure equipment or vehicle replacement or upgrading at the end of existing life of these assets.

Source: National Infrastructure Investment Strategic Plan, Nauru (2019).

II.3

Plan Layout and Content

While the content and resolution of analysis can vary significantly across the Pacific, due to many factors, the NIIPs should follow a similar layout that, as a minimum, incorporates the following sections:

1. Introduction
2. Strategic Environment
3. Planning Framework
4. Funding Assessment
5. Sector Level Review
6. Project Pipeline (long list)
7. Project Prioritization
8. Results and Recommendations
9. Ongoing Management and Improvement Plan

3.1 Table of Contents

The focus and content of national investment plans can vary based on the level of financial sophistication and maturity across governments, the availability of data, the status of previous plans, and many other factors. However, while the detail and resolution of analysis within sections of the report can vary, the aim of this guide is to improve the consistency of content across the Pacific. To this end, the sections below lay out a standard template for the content of an NIIP.

Section 1. Introduction

Establishes the objectives for the NIIP and the geographic, demographic, and other high-level indicators that set the country context.

Subsection headings are likely to include:

- 1.1. Status and objectives
- 1.2. Country context
- 1.3 NIIP governance arrangements
- 1.4. Infrastructure and sectors for inclusion

 Refer **Section III.1**


Section 2. Strategic Environment

Summarizes the demand and drivers for infrastructure investment from an analysis of relevant government policy, strategic planning documents, and corporate business plans.

In addition to the growth and development drivers for new capital projects, this section will also address factors impacting the resilience and longevity of existing infrastructure, for example, climate adaptation, asset deterioration, and loss of service potential, to name a few.

Subsection headings are likely to include:

- 2.1. National strategy and policy objectives
- 2.2. Sector, regional and institutional level plans
- 2.3. Cross-cutting strategies
 - *Asset management practices*
 - *Climate adaptation and resilience*
 - *Institutional capacity and project management*
 - *Infrastructure and pandemic response*

 Refer **Section III.3**


Section 3. Planning Framework

Presents the decision-making hierarchy, governance structure and roles and responsibilities of key stakeholders in developing, prioritizing, and managing the program of work. This should include a summary table of the entities who are included in the NIIP and the assets they are responsible for managing.

Includes a diagnostic of the current planning process and lays out how the NIIP integrates with the strategic planning and budget process. This section also stipulates the sectors included in the NIIP and the project requirements.

Subsection headings are likely to include:

- 3.1. Assessment of the planning environment
- 3.2. Integration of the planning process
- 3.3. Program governance arrangements

 Refer **Section III.1**

Section 4. Funding Assessment

Reviews macroeconomic indicators and reports on the overall health of the local economy. Analyzes historic infrastructure investment levels and financial metrics to establish available government revenue and ancillary sources of infrastructure funding.

Establishes an investment strategy to inform the program prioritization process and to group/rank investments to fit within a realistic funding envelope.

Subsection headings are likely to include:

- 4.1. Macroeconomic indicators
- 4.2. Funding capacity assessment
- 4.3. Potential sources of funding
 - *Government*
 - *State-owned enterprises*
 - *Development partners*
 - *Private sector and community*

4.4. Investment levels

 Refer **Section III.2**

Section 5. Sector Level Review

Presents a sector-by-sector summary on the key issues and infrastructure needs to meet service level expectations in the sector. Information to populate the review of each sector will be extracted from sector and corporate plans, asset management plans, where they exist, and interviews with the sector's primary infrastructure agencies. It sets the context for the candidate infrastructure projects submitted by the sector.

Each sector will form a subsection heading with subheadings likely to include:

- *Management responsibilities*
- *Current status*
- *Key issues (drivers)*
- *Infrastructure needs*

 Refer **Section III.3**

Section 6. Project Pipeline

Presents the long list of candidate projects submitted by the participating agencies and performs checks on any gaps in coverage or disproportionate representation.

A key output from the NIIP process is a structured, central register of all projects and their key attributes (impact, costs, responsibilities, timeframes, etc.). The structure of this database should be discussed along with the timely updating.

Where project briefs are sufficiently developed, e.g., those recommended from studies, those likely to start in the next 5 years or those requiring development assistance, then it is recommended that Project Concept Notes are written up and appended to the NIIP.

Subsection headings are likely to include:

- 6.1. Primary sources and filling gaps
- 6.2. Developing a project pipeline and database
- 6.3. List of candidate projects
- 6.4. Project concept notes (annexed)

 Refer **Section III.5** and **III.6**

Section 7. Project Prioritization

Presents the prioritization methodology including:

- Initial screening of projects
- Prioritization framework and approach
- Weighting criteria
- Approach to scoring

The resulting scores and subsequent grouping and analysis is also included in this section. The analysis also performs a final check on any gaps in coverage or disproportionate representation.

Subsection headings are likely to include:

- 7.1. Prioritization criteria
- 7.2. Prioritization methodology
- 7.3. Analysis of results


 Refer **Section III.4** and **III.7**

Section 8. Results and Recommendations

Presents the results of the MCA prioritization in an executive format for endorsement by the Infrastructure Committee/Steering Group. This is the culmination of the analysis and validation activities detailed in Section III.7.3 and III.7.4 of this guide.

Subsection headings are likely to include:

- 8.1. High-priority projects
- 8.2. Recommendations for steering group
- 8.3. Proposal for endorsement

 Refer **Section III.7**

Section 9. Ongoing Management and Improvement Plan

Provides guidance on the further development and appraisal of robust business cases and any other practices required to ensure projects move forward from inception through to delivery.

Through the NIIP compilation process, it is likely that the lead agency will identify opportunities for improving the way projects are identified and prioritized and these should be presented in the NIIP. This may include recommendations around governance, process, systems or data improvements.

Subsection headings are likely to include:

- 9.1. Management of the program
- 9.2. Improvement plan

 Refer **Section III.8**

SECTION III

Best Practice Approach to Developing Infrastructure Investment Plans

The purpose of this section is to provide practitioners and those compiling NIIPs with a knowledge product (best practice guidance) for each step in the process. It presents the knowledge and practices applicable to most countries where there is consensus about their value and usefulness as accepted best practice.

This section provides guidance on the **eight key steps** (Section II.1.2) of formulating a National Infrastructure Investment Plan, namely:

- III.1 Establish Enabling Environment
- III.2 Review Funding Capacity and Develop Investment Strategy
- III.3 Determine Infrastructure Priorities
- III.4 Develop Prioritization Framework
- III.5 Assemble Long List of Projects
- III.6 Develop Concept Notes and Screen Projects
- III.7 Conduct Multi-criteria Prioritization
- III.8 Ongoing Management



III.1

Establish Enabling Environment

NIIPs are designed to build on and strengthen existing planning processes. Clarity is needed as to the scope of a NIIP in relation to the national project planning framework, and the governance arrangements for its preparation.

1.1 Determine an Appropriate Governance Structure

Section II.1.4 of this publication presents an overview of the typical roles and responsibilities of key stakeholders in delivering a robust multi-year infrastructure investment plan.

1. **Implementing Agency.** The entity largely responsible for managing the public assets in a particular sector.
2. **Lead/Coordinating Agency.** The entity responsible for leading the NIIP development and compilation process including the management of any consultants.
3. **Infrastructure Committee or Steering Group.** This is the committee that owns the final product and champions its endorsement with government.
4. **Finance Ministry.** The ministry responsible for managing governments fiscal responsibilities and economic development.
5. **Development Partners.** The development banks, private sector and international aid agencies who have a role in funding infrastructure across the Pacific.

The role of infrastructure agencies, development partners, and finance ministries, is generally well understood in the context of developing and funding infrastructure. There is far greater variability across the Pacific in how the cross-sector coordination is carried out and who is ultimately responsible for prioritizing projects and endorsing the capital investment plan.

It is recommended that the roles and responsibilities of key stakeholders are clearly defined and documented in the NIIP. A particular focus should be on the responsibilities of the lead/coordinating agency and the cross-sector committee or steering group responsible for determining priorities and endorsing the program.

Case Example # 1: NIIP Governance Structure

Tonga

This case example is presented to demonstrate a governance structure established specifically for NIIP. The structure put in place is a clear manifestation of the commitment of the government to engaging fully in NIIP preparation and implementation.

Governance arrangements established for Tonga NIIP 3 (2021) comprised the following three levels:

- **NIIP Support Staff**, a loose grouping of staff from the National Planning Division of the Prime Minister's Office, the Ministry of Infrastructure, and the Ministry of Finance, responsible for facilitating the mainstreaming of the NIIP process, information sharing, guiding the preparation of project proposals, screening and scoring of projects, and guiding the meetings of the related decision-making Committees.
- **The NIIP Technical Working Committee**, re-established for the NIIP 3 process, comprising a representative from each agency managing and/or operating public infrastructure. Tasks include reviewing the mainstreaming process, the resulting list of priorities, and the report layout and content, as well as supporting NIIP implementation and reporting on status.
- **The NIIP Taskforce**, comprising the Chief Secretary and Secretary to Cabinet (CSSC), CEO of the Ministry of Finance, and the CEOs from all other agencies managing and/or operating significant public infrastructure. Their tasks include reviewing the recommendations from the Technical Working Committee and endorsing the final report and decisions before submission to a Cabinet Committee.

Case Example # 2: Role of an Infrastructure Committee

Cook Islands

This case example is presented to demonstrate how the role of an infrastructure committee can be formalized, legislated, and mainstreamed into the project development lifecycle.

Management of an effective and efficient capital investment program requires adequate vetting and review of project proposals, with continuing oversight of projects through to implementation and handover. The Infrastructure Committee is an integral component of the review process, bringing together both government and private sector expertise to provide review and oversight of capital proposals and projects across the Cook Islands (CI).

The Cook Islands Infrastructure Committee formally consists of the following members:

- 1) Government representatives including:
 - Financial Secretary
 - Secretary of Infrastructure CI
 - CEO of the CIIC
 - Chief of Staff - OPM
- 2) Three members from the private/sector and community.

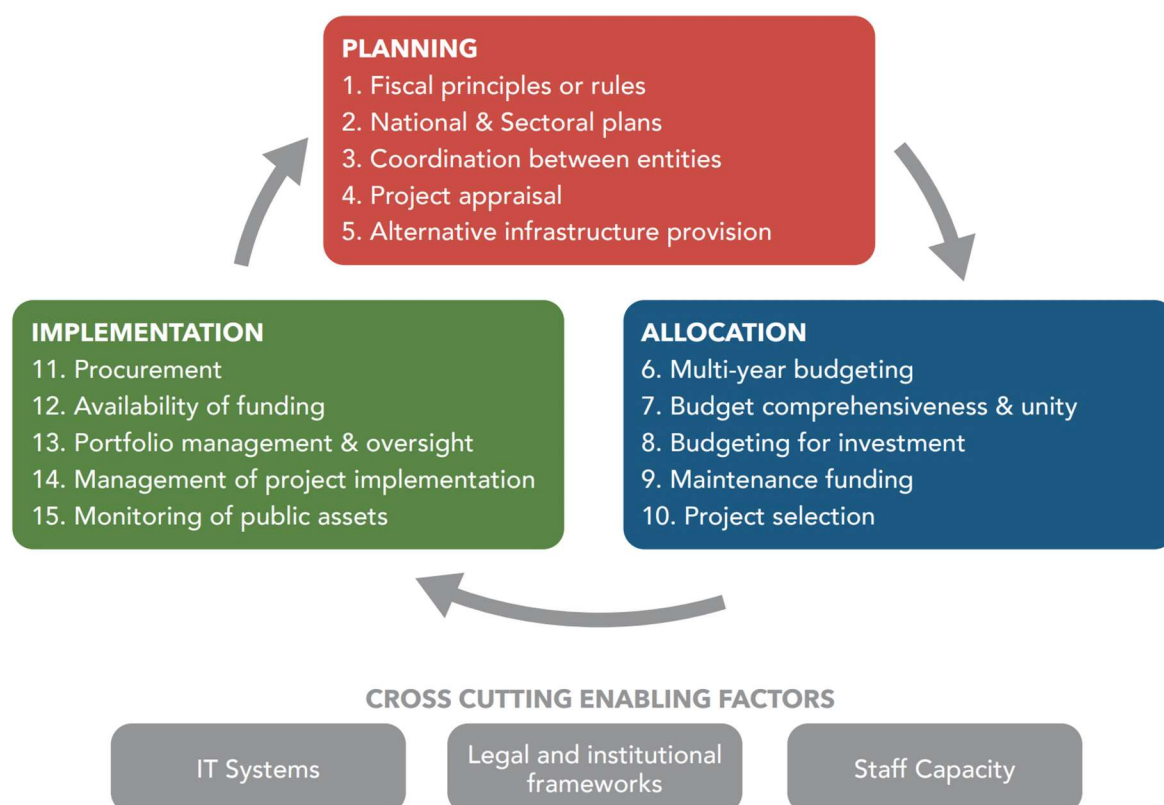
The Chairperson is appointed from the members above. Membership of private sector and/or community representatives is as appointed by Cabinet.

The Infrastructure Committee was established to focus on the alignment of capital investment to the NIIP and the delivery of all infrastructure projects, and to make decisions regarding the management and commissioning of individual projects. The Infrastructure Committee has been constituted in the expectation that, given its membership, it will focus on the planning, prioritization, and the efficient implementation of infrastructure projects, with secretariat services provided by the Cook Islands Investment Corporation (acting in the role of "lead agency").

1.2 Assess Current Investment Planning Environment

The **investment planning framework** is designed for the specific circumstances prevailing in each country, and NIIPs adapt to these circumstances. A useful diagnostic tool that has been developed by the International Monetary Fund's PIMA methodology (Figure III.1).

Figure III.1. Public Investment Management Assessment



IT = information technology.

Source: Public Investment Management Assessment (PIMA): Strengthening Infrastructure Governance, IMF (2019)

PIMA scores both the **institutional design** and the **effectiveness** of the framework against 15 key elements in the investment cycle. Some important themes have emerged in PIMAs conducted around the world to date.

1. The design is generally stronger than the implementation of the framework. That is, there is often a gap between the design and formal rules governing public investment, and how they are followed in practice.
2. There is room to strengthen the effectiveness of institutions at all stages of the investment cycle: planning, allocation, and implementation. Project appraisal and selection are often the weakest.
3. The effectiveness of governments investment management system can be improved across all income groups. Advanced economies on average have the highest PIMA scores, followed by emerging economies; however, scores vary greatly among countries within each income group.

A full application of the PIMA methodology is a major undertaking as it assesses the full ecosystem from planning through to implementation. The overlap between the PIMA elements and those targeted by a NIIP are primarily in the "Planning" of:

- National and sectoral plans
- Coordination between entities, and
- Project appraisal.

While a full PIMA assessment is not conducted as part of the NIIP, lessons can be drawn from the methodology to help inform the assessment of the current investment planning environment. At a minimum, there is a need to know how potential investments are currently processed through the project cycle, and how they are currently managed collectively as an infrastructure pipeline.

Another useful guide to assessing and improving public investment management (PIM) is the World Bank’s *Public Investment Management Reference Guide* (WBG, 2020), which aims to fill the gap between what should be done and the demand for pragmatic guidance on how to adapt the implied reforms. It conveys country experiences and good international practices as a basis for decisions on how to address a country-specific PIM reform agenda, namely:

- Clarification of the definition and scope of public investment and public investment management
- Establishment of a sound legal, regulatory, and institutional setting for PIM, making sure that it is linked to the budget process
- Allocation of roles and responsibilities for key players in PIM across government
- Strengthening appraisal and deepening appraisal methodologies
- Integration of strategic planning, project appraisal and selection, and capital budgeting
- Management of multiyear capital budget allocations and commitments
- Efforts to address the effective implementation, procurement, and monitoring of projects
- Strengthening of asset management and ex post evaluation
- Integration of PIM and public-private partnerships in a unified framework
- Rationalization and prioritization of the existing portfolio of PIM projects
- Development of a PIM database and information technology in the form of a PIM information system



It is recommended that an early task in NIIP development is to assess the current-state project planning framework/ecosystem for infrastructure projects, identify gaps, and use these insights to help inform recommendations for the NIIP enabling environment. It is suggested that a brief diagnostic be undertaken to aid this process.

1.3 Mainstream NIIP into the Investment Planning Process

While the development of a national investment plan culminates in the production of a document suitable for submission to cabinet, the overarching goal in developing a NIIP is to strengthen the end-to-end business process of planning, budgeting, and approving projects for implementation.¹

NIIP adds value to the national investment planning process in the following ways:

- Preparing an overview of infrastructure policy and performance to inform project identification.
- Introducing a systematic and transparent process for cross-sector prioritization of candidate investment projects, enabling a ranking of project impacts.



¹ It is generally not within the NIIP purview to improve the project delivery systems (Items 11–15 in Figure III.1).

- Setting the course for the programming of investments (applying a funding constraint to group project priorities, and examining the balance of the program by location, sector, and scale/effort). Finalizing the investment program is dependent on priority projects being further developed, appraised, and approved for funding.
- Promoting the role of an investment project pipeline and database, and the development and maintenance of an asset management system with the capacity to support infrastructure investment planning.
- Mainstreaming into existing national processes, adopting national formats and templates.



It is recommended that the Infrastructure Committee or Steering Group determine the role the NIIP will play in strengthening infrastructure investment planning and how it interacts with upstream strategic planning frameworks and downstream project implementation systems. It is suggested that the “current state” and “future state” process is documented as a “business process map” so as the required activities and roles can be clearly communicated to government.

Preferred Approach: Business Process Mapping (swim lane)

A swim lane diagram is a technique used in process flow diagrams, or flowcharts, that visually distinguishes the relationship between key steps in the process (activities) and who is responsible for leading and delivering that activity (the owner).

When used to document a business process that involves more than one entity, swim lanes often serve to clarify not only the steps and who is responsible for each one, but also how delays and inefficiencies impact downstream activities. Refer to **Figure II.2** as an example of a swim lane business process map



III.2

Review Funding Capacity and Develop Investment Strategy

A review of funding opportunities for infrastructure development and maintenance sheds light on the appropriate scale of the NIIP investment program, and aids in the preparation of an investment strategy.

2.1 Review the Economic Environment

Macroeconomic, demographic, and government finance indicators and projections can be sourced from documentation accompanying the annual budget and government statistical publications and cross-referenced against sources such as Staff Country Reports from IMF Article IV Consultations with the government.

Preparation of a NIIP does not involve primary analysis of the macroeconomic or fiscal situation; rather it involves drawing on existing sources to develop an overview of the situation. This enables the NIIP team to develop a broad understanding of the economy and its public finances, prospects for the medium term, and implications for the pursuit of national development objectives including provision of efficient and effective infrastructure.

Useful macroeconomic indicators that are generally assessed and reported on include:

- Gross Domestic Product (GDP)
- Gross National Income (GNI)
- Consumer Prices
- Export/Import Volumes
- Primary Industry Metrics (tourism, fisheries, etc.)
- Demographics

A summary of these indicators and projections provides important context to inform the review of funding and investment strategy. Case example # 3 below is an extract from the Palau NIIP (2021)

In reviewing a government's macroeconomic indicators, the NIIP should offer brief commentary on:

1. Recent trends in GDP, and medium-term projections (has the economy been growing, and what are its medium-term prospects?).
2. Trends in the sectoral composition of GDP.
3. Trends in GDP by expenditure type, particularly in gross fixed capital formation (as an indicator of investment in infrastructure).
4. Results of the most recent census (is the population growing, what factors contribute to growth, and are there trends in the composition and distribution of population?).
5. Trends in inflation.
6. Trends in the trade balance.

Case Example # 3: Macroeconomic Indicators

Palau

This case example is presented to demonstrate the typical insights that can be gleaned from an assessment of macroeconomic indicators over time.

Key Economic Development Indicators (Palau, 2021)

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ^a
Production and Income Earned										
Growth of Output (annual change as % of GDP) ^b	(0.5)	5.7	2.1	(1.4)	5.4	8.6	(0.4)	(2.4)	5.1	0.3
GDP per capita, 2015 constant prices (\$ per FY)	12,802	13,918	14,420	14,103	15,026	15,880	15,676	15,352	16,304	15,688
GNI per FY ending 30 September (\$ million at current prices) ^b	199.4	209.8	229.8	243.4	262.1	301.0	322.5	306.3	306.9	289.5
GNI per capita (\$)	10,900	11,700	13,000	14,000	15,100	17,000	18,000	17,100	17,500	17,100
Structure of Output (% of GDP at current basic prices)^b										
Agriculture (%)	4.2	4.2	4.1	4.1	3.7	3.3	3.3	3.6	3.5	3.4
Industry (%)	11.0	9.7	9.4	8.9	8.5	8.9	10.3	9.2	9.4	10.4
Services (%)	84.8	86.1	86.5	87.0	87.8	87.8	86.4	87.2	87.1	86.2
Gross Fixed Capital Formation (%)^b										
(%) ^b	43.7	54.3	55.6	49.3	71.8	76.2	80.4	86.1	78.2	85.2
Trade (%)										
Exports of goods and services ^b	91.4	109.2	127.5	131.9	148.0	163.5	155.1	142.6	133.5	117.5
Imports of goods and services ^b	141.5	167.4	191.4	196.4	223.5	211.9	216.7	222.9	219.0	221.0
Energy Consumption										
(kWh million) ^b	88	88	80	82	84	84	89	90	...	...
Consumer Price Index										
(% annual change) ^b	1.4	4.7	3.6	3.4	4.2	0.9	(1.0)	0.7	1.6	0.6
Central Government										
Central Government Net operating balance FY ending 30 Sept (\$ million) ^b	18.3	17.0	19.6	11.4	19.8	27.9	27.5	22.2	24.4	13.3
External Debt (% of total GDP) ^b	36.2	32.4	32.7	29.0	29.0	23.1	25.3	28.2	30.7	31.1
Tourism and Employment										
Total visitors to Palau ^c	81,101	103,903	118,928	110,823	125,674	168,770	146,650	122,103	115,997	89,726
Direct contribution of tourism to GDP (% of GDP) ^c	18.9	21.3	23.5	25.6	26.6	27.4	25.1	22.7	21.0	19.7
Tourism employees as % of private sector ^c	49.4	50.8	52.0	52.1	51.2	50.6	50.4	48.0	46.2	43.9
Overall Unemployment rate (%) ^b	...	...	4.1	...	...	1.7	...	...	...	...

Economic Impact of COVID-19

This task is particularly important given the lasting economic impact of the COVID-19 pandemic. The unprecedented economic fallout from COVID-19 has changed the fiscal landscape for many Pacific island nations reliant on open borders and tourism. The fall-out is expected to have a noticeable impact on infrastructure investments and government's ability to fund debt in the medium term.

The Lowy Institute (Rajah & Dayant, 2020) reports that:

The economic and social damage wrought by the COVID-19 pandemic threatens a Pacific 'lost decade'. The Pacific has been hit particularly hard by the pandemic because of its heavy reliance on a few key income sources, which have been badly affected by the crisis, especially international tourism.

Two of the three key findings from this report highlighted that:

- *The Pacific faces a potential 'lost decade' owing to the economic devastation caused by the COVID-19 pandemic and an inability to finance the scale of government largesse needed to limit the damage.*
- *A multi-year 'recovery package' of at least US\$3.5 billion (A\$5.0 billion) is needed for the Pacific to fully recover from the pandemic. This should be funded by the region's official development partners.*

See also **Section III.3.6** Infrastructure and Pandemic Response.

2.2 Review Funding Capacity

This section addresses the capacity of the following stakeholders to contribute to the funding of investment in infrastructure, with the aim of then setting an appropriate scale for the investment program:

- a) Government
- b) State-owned enterprises
- c) Development partners
- d) Domestic institutions and groups, including the private sector, financial institutions, and community groups

The capacity of the **government** to fund capital expenditure and maintenance related to infrastructure can be assessed using public finance indicators and projections published with the annual budget. This source has been under pressure in recent years in most PICs, following the global financial crisis and more recently the pandemic. Nauru's NIIP (2019) states that *"the investment plan was designed on the basis that the government of Nauru can afford on its own to finance on a recurring basis every year of around at least AUD2 million of infrastructure capital investment."*

The annual budget papers generally include a statement of government fiscal operations using the Government Finance Statistics format for international comparability (Refer **Table III.1**). This data can be analyzed to identify significant trends. Governments may have set fiscal anchors or targets to encourage stability in fiscal operations, and these can have implications for the capacity of the government to finance infrastructure investment. Examples of indicators for which targets have been set by governments include:

- Domestic revenue as a percentage of GDP
- Compensation of employees as a percentage of operating expense
- External debt as a percentage of GDP
- Capital expenditure as a percentage of total expenditure

Details of government capital expenditure and expenditure on maintenance are usually available from the budget papers, with a significant proportion of these expenditures generally relating to infrastructure.

The budget papers also provide information on public debt. A debt sustainability analysis is often included in the staff report from Article IV consultations between the International Monetary Fund and the government, and this provides guidance on the capacity of the government to borrow for purposes including infrastructure investment.

Table III.1 below provides an example from Tonga NIIP 3 of a statement of government fiscal operations, which provides data from the recent past, budgeted data, and projections into the medium-term.

Table III.1. Government Finance Statistics (GFS)

Statement of Government Operations	2017/18 actual	2018/19 actual	2019/20 prov.	2020/21 budget	2020/21 estimate	2021/22 forecast	2022/23 forecast
Revenue	319.5	378.2	420.2	389.1	432.5	389.5	403.2
Taxes	235.4	243.0	238.6	236.7	222.9	222.9	236.7
Grants	53.1	106.7	139.0	124.1	178.9	135.9	135.9
Other revenue	31.0	28.4	42.7	28.3	30.6	30.6	30.6
Expense	267.3	301.3	331.4	405.0	388.9	365.0	387.9
Compensation of employees	127.5	134.5	148.7	165.7	148.7	165.7	148.7
Use of goods and services	91.6	110.7	129.3	181.3	182.3	141.3	181.3
Interest	8.3	8.0	8.2	8.8	8.8	8.8	8.8
Subsidies	0.8	0.9	0.8	0.9	0.9	0.9	0.9
Grants	5.1	2.9	3.7	4.3	4.3	4.3	4.3
Social benefits	14.5	14.7	17.2	18.2	18.2	18.2	18.2
Other expense	19.4	29.6	23.4	25.8	25.8	25.8	25.8
Gross operating balance	52.2	76.8	88.9	(15.8)	43.6	24.5	15.3
Net cost of nonfinancial assets	20.9	14.0	27.9	21.7	21.7	21.7	21.7
Net lending/borrowing	31.4	62.8	61.0	(37.5)	21.9	2.8	(6.4)

Source: Budget Strategy and Funding Envelope, Government of Tonga, Published in NIIP (2021/22).

Public expenditure reviews, if available, are also a very useful source of information and analysis in areas such as the sectoral composition of expenditure and the balance between recurrent and capital expenditure.

In reviewing a government's fiscal indicators and public expenditure, the NIIP should offer commentary on:

1. The capacity of the government to fund investment in infrastructure, both capital expenditure and expenditure on maintenance.
2. Fiscal anchors and spend limits that may impact infrastructure expenditure.
3. The sectoral composition of expenditure and the balance between recurrent and capital expenditure.
4. How sectors contribute to government revenue.
5. Debt levels and any pressure this may have on the government's ability to fund new infrastructure.
6. Events that may have impacted the fiscal situation (for example COVID-19) and how these events may in turn impact the funding available for infrastructure.

The capacity of SOEs responsible for infrastructure to finance their own capital and maintenance expenditure can be assessed using a time series of annual reports and accompanying financial statements. Trends in items from the profit and loss account (revenue, net profit, maintenance expenditure) and the balance sheet (equity, debt, fixed assets, capital expenditure) can be tracked and analyzed. Government agencies responsible for monitoring SOEs may already be collecting and analyzing this information.

The aim is to develop an estimate of the contribution SOEs can potentially make to the funding envelope for the infrastructure investment program over the planning horizon.

Case Example # 4: Assessment of Financial Health
Tonga

This case example is presented to demonstrate the typical insights that can be gleaned from an assessment of an entity's annual financial statements.

In the most recent Tonga NIIP, 3 years of data were analyzed for selected balance sheet and profit and loss account items, as well as asset values, capital, and maintenance expenditure, with the results summarized in the following graphic. Changes in capacity can also be tracked from similar work in the previous NIIP.

Public Enterprises – Capacity to Self-fund Infrastructure Costs

	Operations	Maintenance	Small Capex	Medium Capex	Large Capex
Tonga Power Limited	High	High	High	Medium	Low
Ports Authority of Tonga	High	High	High	Medium	Low
Tonga Airports Limited	High	High	High	Low	Low
Tonga Cable Limited	High	High	High	Medium	Low
Tonga Communications Corporation	High	High	High	Low	Low
Tonga Broadcasting Corporation	Medium	Medium	Low	Low	Low
Tonga Post Limited	High	High	High	Low	Low
Tonga Water Board	High	High	High	Low	Low
Waste Authority Limited	High	High	High	Low	Low
Tonga Market Authority Limited	High	High	Low	Low	Low
Tonga Asset Managers and Associates Ltd	Medium	Medium	Low	Low	Low

Source: Tonga NIIP 3 (2021)

Summary information on the financing of infrastructure by **development partners** (through grants or loans on concessional terms) is provided in the annual budget documentation. This can be supplemented by recourse to information published by individual development partners in relation to their programs of assistance. This information is useful in assessing both the quantum and the focus of assistance. It needs to be kept in mind that there are many calls on development assistance programs, other than infrastructure. New sources of development funding in relation to climate change mitigation and adaptation warrant particular attention.

The aim is to develop an estimate of the contribution development partners can potentially make to the funding envelope for the infrastructure investment program over the planning horizon.

Domestic institutions and groups with a potential role in funding infrastructure investment include commercial banks, pension funds, the private sector, churches, and fundraising by and from the diaspora to develop social infrastructure. Consultation with these groups enables an assessment to be made of these potential sources of funding.

Public-private partnerships are an emerging modality for the funding of infrastructure investment. These involve governments working with private entities in a collaboration to finance, build, and operate infrastructure projects, e.g., public transport networks. This can enable projects to be

brought onstream more quickly than would otherwise be the case. Public-private partnerships may involve concessions of operating revenue or partial ownership rights over what would otherwise be public sector assets, as a financial incentive to the private partner.

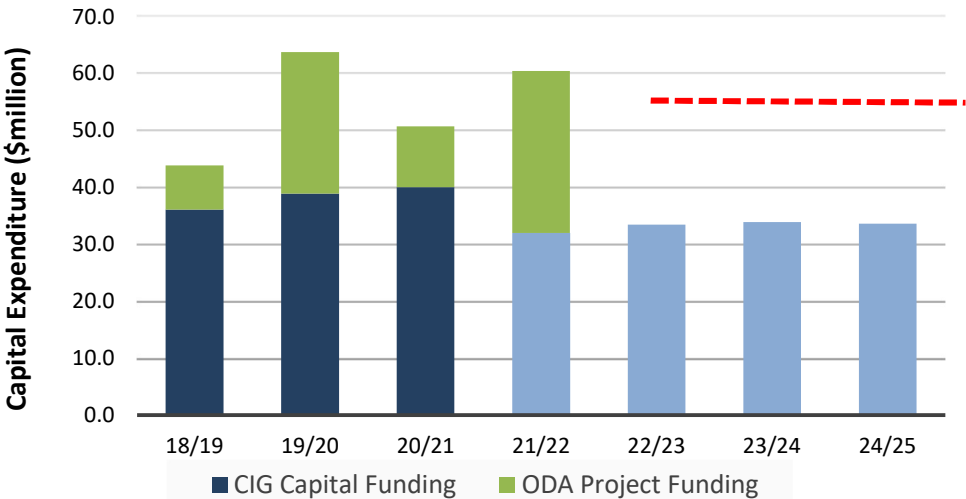


It is recommended, as a minimum, that government’s budget papers are reviewed with relevant fiscal indicators analyzed and reported on. Where the NIIP forecasts significant infrastructure expenditure by SOEs and/or private sector entities, then it is suggested the financial performance and health of these entities is also reviewed.

2.3 Review of Historic Investment Levels

Infrastructure investments are often large and long-lived (this is sometimes described as being “lumpy”), and the mix of investments by sector and project type will vary over time. This indicates that historic investment levels (over the past 5 to 10 years) need to be reviewed to inform the programming of planned investments over a similar forward period. If, for example, historic levels of capital spending on infrastructure have been \$50 million and the NIIP projects an average annual expenditure of \$200 million, then the NIIP will need to use the prioritization process to constrain the program or report on government’s strategy to ramp up to fund and deliver this increased level of investment.

Table III.2. Example of Capital Expenditure Analysis (Historic and Committed)



CIG = Cook Islands Government, ODA = Overseas Development Assistance
 Source: Ministry of Finance and Economy, 2021-25 Budget Book, Government of Cook Islands

In the Cook Islands NIIP (2021) example in Table III.2, we can see the historic and committed levels of government-funded capital investment (dark blue and light blue respectively), along with the historic levels of development partner funding (green). The red dotted line is the average annual funding needed to deliver the 10-year infrastructure program (2023–2033) contained in the NIIP. It demonstrates the gap to be filled by development partners or private sector funding and it also serves to demonstrate that the program target volume of investment is in line with historic achievement levels.

A clear picture is also needed of ongoing and committed infrastructure investment projects, in order to identify the space available (both in terms of funding, and implementation capacity) for the programming of planned projects.

The challenge with this analysis is having access to agency-level capital expenditure and being able to aggregate this across the sectors and entities included in the NIIP. An “apples for apples” comparison of past and future investment in infrastructure is only possible if good financial records are maintained. This also highlights the need for a functional project database, maintained on an ongoing basis. Tonga’s NIIP (2021) notes that, “ongoing and committed projects will account for a significant share of (available) funding in the first few years of the planned five years. Similarly, some funding for projects initiated towards the end of the planning period will spill over beyond that period”.

2.4 Establish Infrastructure Investment Levels

The analysis of potential sources of funding for infrastructure investment, and of historical investment levels, assists in setting the scale of the forward investment program, sometimes referred to as the **funding envelope**. This can be expressed in annual terms, or in relation to a 5- or 10-year program of investment.

Programming of planned investments in the context of the funding envelope needs to bear in mind that:

- There may be some attrition in projects as they are further developed from the concept stage, and appraised.
- Cost estimates for candidate projects are likely to increase as they are further developed and appraised.
- There is a need to leave some space for emergency response activities.

Tuvalu’s NIIP (2016) assumes that “an investment program at a level of just over A\$20 million per annum can be financed. The program includes ongoing and committed as well as proposed projects; allows for project costs beyond the estimated capital cost such as design cost, contingencies and annual maintenance; makes allowance for climate proofing; and includes projects to be financed by international climate change adaptation funding which is currently untapped”.

Finally, the investment strategy needs to identify ongoing funding requirements for the operation and maintenance of planned infrastructure investments, and responsibilities for meeting these costs.

Tuvalu’s NIIP (2016) notes that the “increase in annual maintenance requirements from plan implementation to the end-date of 2025 is estimated at A\$3.4 million. For investments that involve new infrastructure, maintenance requirements represent additions to the maintenance task. For investments involving the upgrade or periodic maintenance of existing infrastructure, however, additional maintenance requirements will be offset to a greater or lesser extent by savings relating to the existing level of maintenance spending”.



It is recommended that the review of the macro-economic situation, financial health of entities, and historic investment levels, culminate in an estimate of the funding potentially available for investment in infrastructure over the plan period. This top-down estimate can then be used to set an appropriate scale for the investment program, for planning purposes.

2.5 Establish Linkages with the Budget Cycle

Budget processes vary from country to country in the Pacific. Budgeting in a medium-term framework (with the budget addressing the budget year, reporting on 2 prior years and projecting 2 forward years), is becoming the norm as is integrating all development expenditure into the annual budget.

Medium-term budgeting, in the form of a **Medium-Term Expenditure Framework (MTEF)**, aims to overcome the shortcomings of an annual budget process.² It is recognized that public programs require funding and yield benefits over a period of years, but annual budgeting largely ignores future costs and benefits. MTEFs take various forms,³ with common features being:

- a) Identification of overall resource availability, through medium-term economic forecasts and the application of high-level fiscal rules.
- b) Determination of current spending needs, through baseline projections over the medium-term of “current policy” expenditures.
- c) Reconciliation of a) and b) to determine resources available (fiscal space) for new initiatives over the medium-term.

MTEFs enable governments to implement shifts in sectoral priorities in ways that are hard to achieve in an annual budget. They facilitate policy decisions, taking into account longer-term cost implications, particularly in relation to capital expenditure. Projections of “current policy” expenditures include those required to maintain and eventually replace the existing asset base, while resources available for new initiatives need to cover new infrastructure investment associated with those initiatives.

In general terms, the project planning cycle runs in parallel with the budget cycle. Infrastructure investments and maintenance expenditures funded by government, including those involving loan finance, spending of cash grants received from development partners and held in a development fund, or budget support, are directly affected by the allocation processes involved in the budget. Expenditure of assistance from development partners in the form of aid-in-kind or cash managed by the partner, is reported in the budget and presented in the same program structure as other expenditures. However, decision-making in relation to this expenditure is related more to aid-programming processes than budget allocation processes.

Section III.8 considers how projects are taken forward following inclusion in the NIIP as “priority projects for further development”. In summary, project business cases are developed by the initiating agency and appraised by a central agency, before being submitted to decision-makers seeking approval for funding. At that point, projects may be taken up in the budget either directly or indirectly via their inclusion in aid programs.



It is recommended that the NIIPs includes a description of the budget allocation process for infrastructure investment and maintenance expenditures, and any decision-making processes outside the budget allocation process in relation to assistance from development partners in the form of aid-in-kind or cash managed by the partner.

² The World Bank (2013), *Beyond the Annual Budget: Global Experience with Medium-Term Expenditure Frameworks*.

³ With a progression in complexity from Medium-Term Fiscal Frameworks to Medium-Term Budget Frameworks to Medium-Term Performance Frameworks. MTEFs can also be prepared at the sector level to guide medium-term allocations within key sectors, and these require other national-level processes to guide allocations to the sector.

III.3

Determine Infrastructure Priorities

The key drivers of demand for infrastructure are articulated in national development strategies. Translating these key drivers of demand into specific strategies and investment proposals is a function of sector and corporate level plans, backed up by lifecycle asset management plans.

The process of compiling a multi-sector investment plan provides an opportunity to take stock of this information in identifying candidate projects and in selecting the criteria for their subsequent prioritization.

3.1 Cascading National Development Objectives

The strategic direction for economic prosperity and quality of life is set within a country's national development strategy (or equivalent). These documents set out the national development goals and the role of infrastructure in achieving these objectives. This establishes the key drivers of demand for infrastructure and infrastructure priorities, which need to cascade down to be reflected in the NIIP and its associated prioritization framework. National development strategies current in selected PICs are listed in Table III.3:

Table III.3. Strategic Plans in Place across the Pacific

Country	National development strategy document
Cook Islands	Cook Islands Economic Development Strategy 2030
FSM	Strategic Development Plan 2004-2023
Fiji	5-Year & 20-Year National Development Plan: Transforming Fiji
Kiribati	Kiribati 20-Year Vision 2016–2036
RMI	National Strategic Plan 2020–2030
Nauru	Nauru's National Sustainable Development Strategy 2019–2030
Niue	Niue National Strategic Plan 2016–2026
Palau	Palau 2020 National Master Development Plan
Samoa	Strategy for the Development of Samoa 2016/17–2019/20 Samoa 2040: Transforming Samoa to a Higher Growth Path
Solomon Islands	National Development Strategy 2016–2035
Tonga	Tonga Strategic Development Framework II: 2015–2025
Tuvalu	Te Kete: Tuvalu Strategy for Sustainable Development 2021–2030
Vanuatu	Vanuatu 2030 The People's Plan National Sustainable Development Plan 2016–2030

FSM = Federated States of Micronesia; RMI = Republic of Marshall Islands.

Source: Authors.

It is important that clear links are established between infrastructure investments and the development goals of the nation, especially as they pertain to the building of new infrastructure such as hospitals, roads, ports, etc.

The link between the National Development Strategy (NDS) and the priority projects identified in the NIIP is provided through two avenues, namely:

1. **Prioritization Criteria:** The Multi-Criteria Assessment framework should always include scoring criteria which assesses the strength of a project's alignment with NDS goals. This could be assessed through direct objective economic/social/environmental criteria that align with NDS objectives (e.g., "contribution to climate change adaptation") or through an indirect criterion such as "alignment with development objectives," which scores the overall alignment of the project with the strategic objectives set in the NDS.
2. **Project Briefs:** The PCN template (refer Section III.6.1) requires infrastructure agencies to identify the NDS objectives the project is aligned with. This gives greater weight to the NDS as concepts are developed, feeding the MCA scoring of that criterion.

3.2 Sector, Regional, and Institutional Level Plans

At the next tier below the national development strategy are the more detailed sector, regional, and institutional level planning documents. As an example, the Solomon Islands National Development Strategy 2016–2035 provides direction to the Solomon Islands National Transport Plan 2017–2036. At the regional level, the national government has recently announced a 5-year program of funding targeted at provincial infrastructure projects, to be injected into the existing Provincial Capacity Development Fund to boost development programs administered by provincial governments. At the institutional level, ministries including the Ministry of Infrastructure Development produce corporate plans with a 5-year time horizon, while the Solomon Islands Water Authority (an SOE) has both a 30-year Strategic Plan 2017–2047 and a 5-year Action Plan 2017–2022.

NIIPs contain sector overviews, sourced with reference to the hierarchy of national, sectoral, regional, and institutional level plans, and presented in a consistent and concise format. Where gaps in these sector plans are identified, or in fact where sectoral plans are not in place, these should be commented on in the NIIP and identified in the Improvement Plan. In situations where there are no sector plans in place, the sector summary would be based on interviews with key agencies in the sector and a review of their respective institutional plans.

The Palau NIIP 2021–2030 provides a useful guide when preparing sector summaries in the NIIP. It includes the following standard headings and subsequent dialogue for each primary sector included in the NIIP:

- a) Vision/Goal
- b) Status
- c) Key issues
- d) Strategy
- e) Demand for infrastructure

Information provided under the Status heading in the sector overviews included a description of sector plans, details of agencies involved in infrastructure provision in the sector and the allocation of responsibilities among these agencies, and details of the capacity and coverage of infrastructure facilities in the sector and the services provided from this infrastructure.



It is recommended that NIIPs promote the adoption of robust sector and corporate/institutional-level plans and summarize the infrastructure drivers and development needs from these plans in the sector-level overview.

3.3 Asset Management Plans

Asset management plans provide a systematic approach to identifying and prioritizing investments in maintenance, rehabilitation, and eventual replacement of existing assets. Asset management plans are also the key source of information in relation to project costing.

Preferred Approach: Development of Asset Management Plans

Effective asset management is a shift in focus toward planning for the long-term life cycle of an asset and its sustained performance, rather than reacting to its short-term, day-to-day aspects. There are many definitions of asset management. Features in common include the following:

1. Assets exist to deliver customers a service (e.g., water, power, shelter)
2. We must consider the whole-of-life costs of owning these assets (operating, recurrent, capital)
3. Asset management is about delivering appropriate levels of service in a cost-effective manner.

The *International Infrastructure Management Manual* (IPWEA, 2015) defines asset management as “an integrated set of processes to minimize the lifecycle costs of owning, operating and maintaining assets, at an acceptable level of risk, while continuously delivering established levels of service.”



Now in its 6th Edition (2020) the International Infrastructure Management Manual (IIMM) provides a multidisciplinary set of guidelines for determining lifecycle investment strategies for public infrastructure assets. Recognizing that the ISO55000 Asset Management Standards are very much the “What to do”, the IIMM provides the “How to do it” in terms of applying the standards for infrastructure asset management by way of case examples, templates and guidelines. The IIMM is a knowledge product that provides practical guidance to

develop long-term Asset Management Plans, usually 10–20 years or more for infrastructure assets. These plans outline the activities and programs required to deliver the desired level of service to the public in the most cost-effective way.



ISO 55000 Standards for Asset Management (ISO, 2014) provide an overview of the subject of asset management and the standard terms and definitions. ISO 55001 is the requirements specification for an integrated, effective management system for asset management. ISO 55002 provides guidance for the implementation of such a management system. The development of these standards was achieved by ISO Committee TC251, with 31 countries participating. The standards were published in February 2014 and are available from national standards bodies such as the British Standards Institution.

Preferred Approach: Condition Assessment of Public Infrastructure Assets

Another valuable resource in relation to the application of asset management principles to infrastructure investment planning is the *Methodology for Condition Assessment of Public Sector Infrastructure Assets in Pacific Island Countries* (PRIF, 2020) This sets out a methodology for asset condition assessments, including an approach using physical condition ratings only and an extension which also rates the functional performance of the asset. Specific guidance is provided by sector for asset condition assessments. In relation to asset replacement costs, estimates of unit prices are provided by sector. These are presented in 2019 US dollars and are based on costs in Fiji, with escalation factors provided for other countries (allowance for inflation since 2019 is also needed to apply these unit prices to the current day). Unit prices calculated in this way provide an important resource in estimating project costs.

The Palau NIIP 2021–2030 includes a methodology for asset condition assessments and presents results for condition assessments undertaken in the course of preparing the NIIP, which also

include estimated unit costs of construction and maintenance rates for particular types of assets. This provides a very useful resource for the NIIP in relation to project identification and costing, and estimation of maintenance requirements.

Case Example # 5: Identifying Asset Rehabilitation and Renewal Requirements
Nauru

This case example is presented to demonstrate how good asset management practices can assist with identifying infrastructure rehabilitation and renewal projects and aid in preparing a 5- to 10-year program of capital maintenance expenditure.

To provide public services effectively and cost efficiently requires ongoing investment in infrastructure asset maintenance and rehabilitation (capital maintenance) in a timely way. In the absence of such investments, infrastructure assets suffer premature degradation and failure, disrupting public services and significantly reducing the service life of assets.

Nauru’s Cabinet endorsed an Asset Management Policy in 2017 to ensure that investment levels are correctly prioritized to achieve required service levels. In 2018–19, a central asset register was created and populated with information on all major public assets on the island, including an assessment of their condition. Algorithms were then developed to analyze this data and identify capital maintenance needs for the next 5–10 years. These candidate projects were then incorporated into the NIIP process.

Extract from the Condition Assessment Methodology used to identify rehabilitation needs

Asset or Asset Component's Operating Condition	Condition Rating	Asset's Maintenance History	Condition Rating
Asset or asset component is in "brand new" condition, with no defects and no impairment; excellent operating condition, meeting or exceeding the service level requirements - Only routine maintenance is needed	5	Asset maintained in accordance with the maintenance strategy throughout its service life, with adequate funding available for maintenance	5
Asset in "Like-new" condition, with no defects and no impairment; good operating condition, meeting the service level requirements - Only routine maintenance is needed	4	Asset maintained in accordance with the maintenance strategy during most of its service life, with adequate funding available for maintenance	4
Asset or asset component shows minor age-related wear, with minor defects and/or minor degradation in operating performance; the lower threshold of required service level is still being met	3	Asset maintained in accordance with the maintenance strategy since last renewal, with adequate funding available for maintenance	3
Asset or asset component has worn out to a stage, where its performance no longer meets acceptable performance level . However through refurbishment/renewal it is possible to improve asset's performance to acceptable levels	2	Asset has not been maintained in accordance with the maintenance strategy during most of its service life, which has resulted in significant impairment of asset condition	2
Asset or asset component has degraded to a stage that its performance cannot be restored to acceptable levels through renewal and asset must be replaced.	1	Asset has not been maintained in accordance with the maintenance strategy during most of its service life, which has resulted in major impairment of asset condition	1
Asset or asset component has failed in service or it poses the risk of catastrophic failure in service posing serious public safety risk and must be retired immediately and replaced.	0	Asset was not maintained in accordance with the maintenance strategy during most of its service life, which has resulted in total impairment of asset condition and asset is at end of its service life	0

Most PICs have regulatory requirements for asset registers, both at the central and institutional levels. Some of these systems focus more on financial reporting and internal controls than on asset management, and it is an important function of the NIIP process to promote the strengthening of asset management systems in a manner useful for investment planning. NIIPs should promote the optimal use of existing infrastructure and ensure investment decisions balance the need to preserve existing infrastructure and ensure new infrastructure considers the whole-of-life costs of operating and maintaining that infrastructure.



It is recommended that NIIPs promote the adoption of robust asset management practices to ensure investment plans include sufficient funds for the rehabilitation and renewal of existing infrastructure. This should be highlighted in the sector level summary.

3.4 Climate Adaptation and Resilience to Natural Disasters

The resilience of infrastructure assets in the context of climate change and natural disasters is a pressing concern across PICs. This extends to being more resilient to sea level rise and coastal erosion and more broadly to land use planning and building infrastructure to be more energy efficient and resilient to extreme weather events, earthquakes, and other natural disasters.

A useful reference in efforts to address the resilience of infrastructure assets in the face of rising sea levels is *Guidance for Managing Sea Level Rise Infrastructure Risk in Pacific Island Countries* (PRIF, 2021). This report stresses that strategic long-term planning is required to manage risk to coastal infrastructure from sea level rise. It concludes that effective long-term management of infrastructure is based on robust controls on the quality of construction and importantly where infrastructure should, or should not, be developed. Guidance is provided to decision-makers to develop dynamic adaptive management plans for critical infrastructure and communities. The outcome sought is operational infrastructure plans that are sensitive to climate change triggers to manage risk. In lieu of finalized adaptation plans, transitional guidance is provided to manage risk based on fixed levels of sea level rise and/or selected sea level rise projections for various infrastructure types.

Among the controls referred to above, attention to building codes and physical planning are key requirements. Another PRIF publication, *Regional Diagnostic Study on the Application of Building Codes in the Pacific* (PRIF, 2020), develops a generic action plan that can be tailored by individual countries to update their national building codes and improve administration, management, and compliance. If 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.

There are many more guidance documents for building more resilient infrastructure such as *Climate Risk Management in ADB Projects* (ADB, 2014), which identifies climate change risks to project performance in the early stages of project development and incorporates adaptation measures in the design of projects at risk, and the UK Treasury's publication *Accounting for the Effects of Climate Change: Supplementary Green Book Guidance* (HMT, 2020), which supports analysts and policymakers to ensure, where appropriate, that policies, programs, and projects are resilient to the effects of climate change, and that such effects are being considered when appraising options.

In relation to physical land use planning, Tonga's *National Spatial Planning and Management Act* (GoT, 2012) provides an example of a framework to guide improved land use planning and the distribution of infrastructure. This framework is now being given practical application with the formation of the National Spatial Planning Authority.

Finally, there are some useful assessment frameworks such as the Public Expenditure and Financial Accountability's *Assessment of Climate Responsive Public Financial Management* (PEFA, 2021) completed for Samoa to assess the responsiveness of their PFM systems in supporting national climate change policies.

As with Asset Management, it is not the role of a NIIP to implement new climate resilience frameworks; rather, it is intended that the NIIP will draw on what frameworks governments do have in place to identify and prioritize candidate projects. Where gaps exist against best practice guidance laid out in the documents above, among others, then the NIIP will identify these in the improvement plan.



It is suggested that infrastructure's contribution to climate change adaptation and disaster risk management for the broader community, and resilience of the asset in relation to climate change and natural disasters, are included as potential criteria in the prioritization of candidate infrastructure investment proposals. We would also expect to see references to climate adaptation considerations in the sector summary section.

3.5 Institutional Capacity and Project Management

In addition to a funding envelope constraint, a NIIP is constrained by the implementation and project management capacity of locally based contractors and agencies. Projects can at times be implemented on a turn-key basis by foreign contractors, but even here agencies responsible for projects must devote resources to project preparation, supervision, and monitoring and evaluation.

Further, there are benefits to the domestic economy from optimizing local content in infrastructure procurement, including local consulting firms, international contractors establishing a local presence, and national contractors and suppliers. Benefits from local content can include additional employment, economic multipliers, capacity building for contractors and workers, appropriate technology, and more effective maintenance.

Institutional capacity of the implementing and operating agency is a potential criterion in the prioritization of candidate infrastructure investment proposals, as is the potential for local content in project implementation and operation. Capacity constraints are typically assessed post-MCA scoring, during the project screening and analysis stage (refer **Section III.7.3**).

3.6 Infrastructure and Pandemic Response

The International Monetary Fund's recent publication *How to Manage Public Investment during a Postcrisis Recovery* (IMF, 2021) considers how countries should manage public investments to aid recovery from the COVID-19 pandemic and similar crises. It provides guidance on making efficient use of public investments to support economic recovery at three different capacity levels: basic, medium, and advanced. The basic and medium practices reflect simplified approaches that can be applied quickly by countries with limited capacities, within existing legal and regulatory frameworks.

"The main advice of the note is as follows:

- *Countries should consolidate and accelerate existing project planning and decision-making procedures.*
- *The public investment plan (PIP) should be revisited, and possible changes made to the prioritization and phasing of projects, accelerating some and deferring or canceling others.*
- *Project appraisals may need to be updated and supplemented with revised criteria.*
- *The government should define clear selection criteria based on the targets for the overall recovery program.*
- *The post-crisis investment program should be reflected in transparent medium-term budget decisions. Maintenance and capital repairs can be very productive and should play important roles in post-crisis recovery.*
- *Procurement processes may need accelerating but should be undertaken with necessary safeguards to support compliance and effective oversight.*
- *Strong project management is necessary to ensure that projects are implemented according to the planned timetable and within the budget, as well as to produce the expected benefits.*
- *Portfolio monitoring is essential for assessing progress and assuring the successful implementation of the overall project portfolio in the post-crisis recovery program."*



It is suggested that the need for focusing on economic recovery following a pandemic or similar crisis is given more prominence in the MCA ranking and decision-making process (i.e., by increasing the weighting of MCA criteria relevant to economic recovery).

3.7 Gender Equality and Social Inclusion

Mainstreaming of gender equality and social inclusion into infrastructure planning at all stages of the project cycle is an emerging consideration in NIIP preparation. Among the initial project readiness filters applied in the Palau NIIP 2021–2030 for candidate infrastructure projects is “*have gender-sensitive, equality and social inclusion (GESI) measures been incorporated?*”. These filters are described as essential inputs to any proposed infrastructure investment before it can be considered for government funding. Prioritization criteria included improved distribution of growth benefits to Palauans (re: GESI considerations).

Project prioritization criteria included in Tuvalu’s NIIP (2016) included a social benefits criterion which addressed the question “*Will the project have other social benefits for the community (e.g., improving the lives of women and children, assisting vulnerable/ disadvantaged groups, alleviating poverty, responding to rural/urban drift, improving safety)?*”.

PRIF’s recent report, *Inclusive Infrastructure in the Pacific* (PRIF, 2021) provides a guide to the mainstreaming of gender equality and social inclusion considerations at all stages of the project cycle for infrastructure investment, with recommendations and a practical toolkit aiming to streamline the process for infrastructure stakeholders. The approach recommended to GESI mainstreaming emphasizes upfront assessments leading to stronger design, implementation, and reporting. The report concludes that significant awareness raising, and capacity building is needed for inclusive infrastructure to become a reality, as is the involvement and coordination of public, private, and civil society stakeholders.

III.4

Develop Prioritization Framework

Prioritization of candidate infrastructure projects helps focus planning activity on the projects with the greatest potential impact on the achievement of national development objectives.

Infrastructure needs are always likely to exceed available resources, and prioritization helps put scarce resources to the best use.

4.1 Setting up the Multi-Criteria Analysis Framework

MCA is the infrastructure project prioritization methodology adopted throughout NIIPs. It provides a rapid appraisal technique to rank project concepts based on how well they align with established program objectives. MCA involves scoring projects against a set of criteria linked to national development objectives and economic outcomes.

The key steps in setting up the MCA framework are:

- Step 1:** Agree the process for the **initial screening** of candidate projects (on a pass/fail basis) to check their readiness, ensure they are consistent with national development objectives, needed in the next 5 to 10 years, and that consultation has commenced in relation to relevant regulatory processes including environmental impact, physical planning requirements, building codes etc.
- Step 2:** Set the **prioritization criteria** to allow a qualitative assessment of environment, social, economic and performance impacts. Guidance is provided in Section III.4.2.
- Step 3:** Develop an approach for **scoring and weighting** each criterion. For example, scoring could use a scale from 0 (no compliance with the criterion) to 3 (a high level of compliance with the criterion). Criteria could be weighted evenly in a base case, with capacity to adjust weights should this be warranted during a sensitivity assessment. Guidance is provided in Sections III.4.3 and 4.4
- Step 4:** Determine **how scoring is to be undertaken** and how scores are to be processed. Guidance is provided in Section III.7.
- Step 5:** Document the MCA approach and seek endorsement. This especially applies to the design and application of a multi-sector MCA framework where less quantitative and more qualitative information is used to inform decisions.

It is desirable for the MCA framework to be endorsed by decision-makers at an early stage in the NIIP exercise so that arrangements can be set in place to undertake the prioritization.

As an endnote to the MCA framework, prioritization is about assessing the relative merits of individual projects (ranking project impacts). Given that this is a rapid appraisal process, the rankings are best applied to grouping projects rather than focusing on individual scores. In developing an infrastructure investment program, a funding constraint is applied, and checks are made on the balance of the program in relation to factors such as project location, sector, and scale/effort.

4.2 Developing Prioritization Criteria

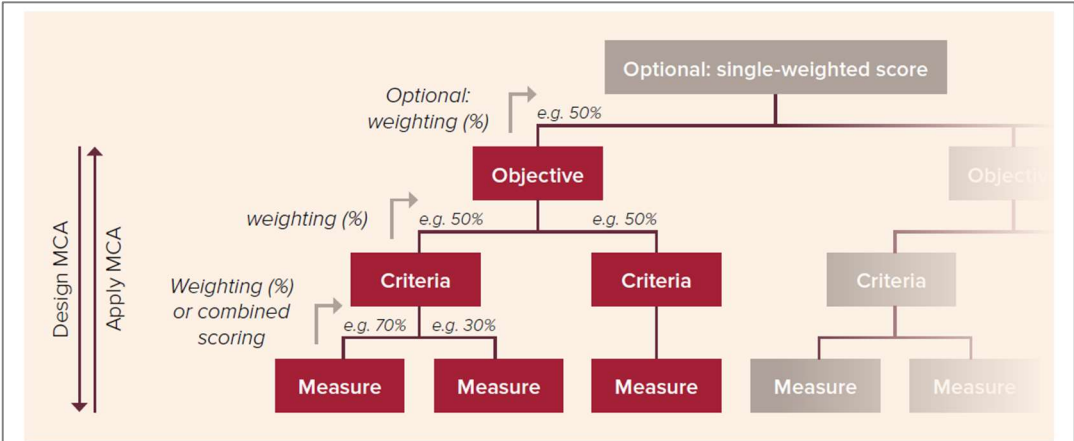


Infrastructure Australia’s *Guide to Multi-Criteria Analysis* (IA, 2021) provides the following definition of the multi-criteria prioritization process:

“MCA is an analysis process that scores and rates options against multiple criteria that are linked to the objectives of an investment. When applied consistently and transparently, it is a suitable approach for filtering options before applying more detailed quantitative analysis.”

This technical guide is a simple to use guideline applicable to the Pacific. It provides a useful knowledge resource for infrastructure MCA and the approach herein aligns with the approach proposed in that guide (Figure III.2).

Figure III.2. Designing a Robust MCA framework



The MCA consists of the following components, each of which are described in further detail in subsequent sections:

- Objectives:** These translate and describe the higher-level government priorities and objectives in a way that is appropriate for a specific investigation, as identified in **Stage 1** of the Assessment Framework.
- Criteria:** Outcomes or indicators by which an option is assessed against the stated objectives. Together, criteria address the question 'What distinguishes a good choice and a bad one?'⁴ Criteria are typically scored and weighted to give a single score for each objective.
- Measures:** These link the underlying quantitative evidence or qualitative judgements to the criteria scoring. Where there are multiple measures, these are scored (and potentially weighted) in a similar way to the criteria.
- Weighting:** The relative importance of a given criterion within the scope of the decision context. Weights are used to develop a weighted score for each of the defined objectives. Weights can also be applied to define the relative importance of the measures that inform the criteria and to combine scores for objectives into a single score for each option.
- Scores:** An assessment of how the option performs against the established criteria. This should be based on a qualitative rating underpinned by either quantitative score ranges (where available) or, attribute descriptions for qualitative measures, so a reader can understand how scores have been determined.

MCA = Multi-Criteria Analysis.
 Source: Infrastructure Australia’s “Guide to Multi-Criteria Analysis” (2021), Figure 4.

As well as being aligned to national development objectives, the prioritization criteria should be:

- **Objective** – criteria should be evidence based and involve quantitative data where possible.
- **Manageable** – criteria should recognize the capacity constraints faced by users.
- **Reliable** – criteria should inspire confidence that the resulting project priorities are sound.

Selecting criteria that are consistent with national development objectives normally involves forming criteria groups relating to economic impact, social impact, and environmental impact, often supplemented with other criteria relevant to project appraisal. These various aspects of project impact can be given different emphasis in national development objectives. For example, the prominence attached to climate change adaptation in Tuvalu’s national development objectives resulted in the Tuvalu NIIP (2016) leading out with environmental impact in its listing of prioritization criteria groups. The Cook Islands NIIP (2021) adapted to processes already in place in-country by utilizing the MCA from the established *Te Tarai Vaka* project planning process.

There should not be too many criteria; otherwise, the prioritization exercise becomes unwieldy and the averaging across many criteria tends to smooth the range of scores assigned. Criteria should follow the “Mutually Exclusive, Collectively Exhaustive” principle; in other words, there should be little to no overlap between criteria, and the criteria should collectively determine the impact the project will have on the economy, environment, and society.

Preferred Approach: Infrastructure MCA Criteria (Economic, Social, Environmental and Performance)

Presented in Table III.4 is a set of criteria drawn from a review of previous NIIPs, which provides an example consistent with best practice seen across the Pacific.

Table III.4. Balanced Set of MCA Objectives (Impact Areas) and Criteria

Objective	Criteria
ECONOMIC <i>Promotes economic development of public and private sector and is financially sustainable.</i>	a) Potential for economic viability b) Ability to meet ongoing costs of operation and maintenance c) Impact on development of the private sector
SOCIAL <i>Enhances social services, wellbeing, and regional development.</i>	a) Impact on quality or coverage of social services (education, health, community) b) Impact on regional development c) Impact on good governance
ENVIRONMENTAL <i>Protects the environment and provides resilience to extreme events.</i>	a) Contribution to climate change adaptation / disaster risk management b) Resilience of the project to climate change / natural disasters c) Impact on the environment
ALIGNMENT <i>Is of strategic significance and optimizes use of existing assets.</i>	a) Linkages with other infrastructure b) Optimal use of existing infrastructure c) Urgency of the project (consequences if project does not proceed)

MCA = Multi-Criteria Analysis.
 Source: Authors.

Further definition of the above criteria is provided in **Table III.6** along with the scale against which each one is assessed. In assessing candidate infrastructure projects against these criteria, it is important to keep in mind that avoiding a deterioration in the services provided by infrastructure is valued in a similar way to expanding services. Other aims of the set of criteria above are achieving a balanced consideration of benefits and costs in assessing impacts and formulating and scoring criteria such that they are independent of project scale.

It is expected that early in the NIIP process a workshop or survey is conducted with the core governance team (Steering Committee and the Ministry of Finance) to capture their perspective on key decision criteria on project importance/impact and use the insights gained to adapt the table above to reflect local drivers, including those prominent in the NDS.

Bearing in mind the need to keep the number of criteria manageable (which suggests that adding criteria may need to be at the expense of other criteria in the list), a set of additional example criteria used across the Pacific include:

ECONOMIC IMPACT / FINANCIAL VIABILITY

- Investment cost per beneficiary*
- Investment cost per job created*
- Impact on economic growth and employment
- Impact on costs and efficiency of infrastructure users
- Access to markets
- Maintenance of essential services
- Improvements in service coverage, reliability, safety, or compliance with relevant government regulations or international obligations
- Impact on government revenues

*** Note:** A problem with these measures is the difficulty in calculating the quantitative variables in a meaningful way. For example, a beneficiary receiving a piped water supply for the first time is not equivalent to a beneficiary experiencing less delay in an airport queue. Job creation is also a difficult metric to assess.

SOCIAL IMPACT / SERVICE DELIVERY

- Delivery of community benefits*
- Creation of employment for women
- Will the scheme specifically support the household and income generation activities of women, reducing the burden for basic tasks, whilst improving women's and children's health and nutrition?
- Improved distribution of growth benefits (gender equality and social inclusion considerations)
- Service quality / reliability / safety
- Promoting national culture

*** Note:** Tuvalu's NIIP (2016) included a social benefits criterion which addressed the question "*Will the project have other social benefits for the community (e.g., improving the lives of women and children, assisting vulnerable/ disadvantaged groups, alleviating poverty, responding to rural/urban drift, improving safety)?*". Broad criteria of this nature have appeal, though a constraint is that if the criterion is too broad it becomes less useful in establishing a ranking among projects as most projects tend to be able to stake a claim to strong performance under the criterion.

ENVIRONMENTAL IMPACT / RESILIENCE

- Risk exposure*
- Impacts/benefits to air quality and Greenhouse Gas (GHG) emissions

*** Note:** Tonga NIIP 3 included a "project risk" criteria group which included criteria addressing the number of critical risk ratings to the project and the number of critical risk ratings from the project (as assessed using an existing Risk Screening Toolkit). This criteria group addressed a range of risks including environmental risks and was designed specifically to draw on a risk screening process already in place.

OTHER IMPACTS

- Institutional capacity of implementing and operating agency
- Appropriateness of technology in implementation and operation
- Potential for local content in implementation and operation
- Ease of implementation*
- Project readiness / land availability / availability of finance*

* **Note:** Ease of implementation has the disadvantage as a criterion that is not independent of project scale. Several early NIIPs included aspects of project readiness within prioritization criteria, while later NIIPs address this as a screening consideration rather than a prioritization consideration.



It is recommended that a balanced set of prioritization criteria, similar to those set out in **Table III.4**, are developed. It is expected that these criteria will be adjusted to align with national priorities, existing frameworks, and those surfaced through stakeholder workshops. The criteria should be broad in their coverage and mutually exclusive from each other. Too many criteria will reduce the effectiveness of the process by smoothing the range of results. The scoring of each criterion is addressed in **Section III.4.3**.

4.3 Scoring Each Criteria

When developing scores, you should aim for simplicity and intuitiveness. The framework should ensure that scores are of a scale and direction that reflects how a “reasonable person” would understand the problem (e.g., better alignment to criteria means a higher value score).

A simple numerical linear scale is best suited to the task supported by qualitative prompts (e.g., strong, moderate, weak), and, if possible, more quantitative descriptions of the band thresholds. This approach is simple and supports other visual methods to summarize and communicate the results. It also helps ensure a level of transparency and rigor in the scoring process (Table III.5).

Table III.5. Example Scoring of Criteria (Infrastructure Australia)

MCA Rating	Colour	Score	Description	Example threshold
Strong positive		5	Strong, positive impact for the criteria or measure	Scores of 5 for journey time & reliability changes
Moderate positive		4	Moderate, positive impact for the criteria or measure	Scores of 4 for journey time and reliability changes or mixed 4/5 score
No significant impact		3	No significant positive or negative impact	Any scores with a 3 are classified in this category
Moderate negative		2	Moderate, negative impact for the criteria or measure	Scores of 2 for journey time and reliability changes or mixed 1/2 scores
Strong Negative		1	Strong, negative impact for the criteria or measure	Scores of 1 for journey time and reliability changes

Source: Infrastructure Australia's “Guide to Multi-Criteria Analysis” (2021), Table 9.

Preferred Approach: Infrastructure MCA Scoring

When developing the criteria scoring, you should aim for simplicity and intuitiveness. While it is desirable for the scoring process to be as concise, transparent, and objective as possible, the more diverse the range of projects being evaluated, the more generic and subjective these criteria can become. This paradigm is relevant when creating a framework for the multi-sector infrastructure in NIIPs as we need to ensure the threshold descriptions are as applicable as possible to the range of project scenarios encountered.

Table III.6 provides a best practice template for scoring each objective and associated criteria from **Table III.4**. The thresholds and mostly qualitative descriptors in the last column are provided to help participants “position themselves” in an appropriate band. It is not expected that they will be valid for all project types across all sectors. The broad coverage and disparate nature of projects within NIIPs prohibits the development of more specific and measurable thresholds.

For example, while a new bridge can be readily assessed against the scoring criteria for its “Ability to meet ongoing costs of operation and maintenance”, it will be far less tangible rating an urban town center master planning study against this same criterion. In more advanced frameworks it is possible that different rating criteria exist for evaluating different types of projects (for example, a planning study versus the refurbishment of an existing asset versus construction of a new asset).

Table III.6. Suggested Scoring Scale for MCA Analysis

Objective and Criteria	Scores	Description / Threshold
1. ECONOMIC IMPACT		
Potential for economic viability <i>How likely is it that the project will produce sufficient economic benefits to recover the capital cost and generate a reasonable economic internal rate of return?</i>	0	Unlikely No significant economic benefits. Not a key project driver.
	1	Some Some economic benefits but these sum to significantly less than the capital cost. Project is not driven by need for an economic return.
	2	Moderate A moderate level of economic benefits summing over the life of the project to a figure approaching the capital cost.
	3	High Significant economic benefits, capable of recovering the capital cost of the project and generating a reasonable economic internal rate of return.
Ability to meet ongoing costs of operation and maintenance <i>Will the project be able to support the additional (incremental) costs of operation and maintenance through user charges etc.?</i>	0	Poor No potential to recover additional O&M costs through charges (< 10%).
	1	Fair Low potential to recover additional O&M costs through charges (10% to 40%).
	2	Good Moderate potential to recover additional O&M costs through charges (41% to 80%).
	3	Excellent High potential to recover additional O&M costs through charges (>80%), or project reduces O&M.
Impact on development of the private sector <i>Will the project provide a stimulus to the growth of existing businesses and the development of new businesses?</i>	0	None No impact on the performance of existing businesses or prospects for new businesses.
	1	Low Some impact on private sector development. A few examples of businesses impacted positively.
	2	Moderate Moderate impact on the private sector. Examples of several businesses impacted positively.
	3	High Major contribution to the growth of existing businesses and/or the development of new businesses. Many businesses impacted positively.

Objective and Criteria	Scores		Description / Threshold
2. SOCIAL IMPACT			
Impact on quality or coverage of social services <i>Will the project facilitate improvements in the delivery of education, health, or community services?</i>	0	None	No impact on education, health, or community services.
	1	Low	Project makes an indirect contribution to the delivery of education, health, or community services.
	2	Moderate	Project facilitates the delivery of education, health, or community services as an explicit objective.
	3	High	Project delivers major improvements to the quality or coverage of education, health, or community services, as its main objective.
Impact on regional development <i>Will the project provide a stimulus to rural/regional/outer island development through improvements in infrastructure services in these areas?</i>	0	None	No impact on rural/regional/outer island development.
	1	Low	Project makes an indirect contribution to rural/regional/outer island development.
	2	Moderate	Project facilitates rural/regional/outer island development as an explicit objective.
	3	High	Project delivers major improvements in rural/regional/outer island development through improvements in infrastructure services in these areas, as its main objective.
Impact on good governance <i>Will the project contribute to better governance through improvements in public administration or law and order?</i>	0	None	No impact on good governance, either in public administration or law and order.
	1	Low	Project makes an indirect contribution to good governance.
	2	Moderate	Project facilitates good governance as an explicit objective.
	3	High	Project delivers major improvements in good governance through improvements in public administration or law and order, as its main objective.
3. ENVIRONMENTAL IMPACT			
Contribution to climate change adaptation and/or disaster risk management <i>Does the project have specific objectives or components related to climate change adaptation or disaster risk management, for the benefit of the broader community?</i>	0	None	Does not include any contribution to climate change adaptation or disaster risk management for the broader community.
	1	Low	Some contribution to climate adaptation and/or disaster risk management for the broader community, but not a key focus of the project and not included in project objectives.
	2	Moderate	Climate change adaptation and/or disaster risk management for the broader community included among a range of project objectives.
	3	High	Climate change adaptation and/or disaster risk management for the broader community are specific and major objectives of the project.
Resilience of the project to climate change / natural disasters	0	Little	Low resilience to climate change / natural disasters. Considered highly vulnerable, with mitigation difficult and costly. No improvement in resilience, if project relates to existing assets.
	1	Some	Some resilience, though significant level of risk involved in project in its current form requiring mitigation at additional cost. Some improvement in resilience, if project relates to existing assets.

Objective and Criteria	Scores	Description / Threshold
<i>How resilient is the asset to the potential effects of climate variability, climate change, and natural disasters? Resilience in this context relates to capacity to deliver the services intended over its design life.</i>	2 Moderate	A moderate level of resilience, with some remaining risk requiring mitigation that is relatively easy to address. Moderate improvement in resilience, if project relates to existing assets.
	3 High	Highly resilient to climate change / natural disasters. Manageable level of risk involved in the project as proposed. Major improvement in resilience, if project relates to existing assets.
Impact on the environment <i>Will the project have positive, neutral, or negative impacts on the environment, e.g., land, coastal and marine environments, water resources?</i>	0 Highly Negative	Major negative impact on the environment. Examples of major risks to land, coastal, marine environments or water resources.
	1 Some Negative	Some negative impact on the environment, with some examples provided.
	2 Some Positive	Some positive impact on the environment, with some examples provided.
	3 Highly Positive	Major positive impact on the environment. Examples of major benefits for land, coastal and marine environments, or water resources.
4. ALIGNMENT / PERFORMANCE		
Linkages with other infrastructure <i>How connected is the proposed project with existing infrastructure? e.g., extending coverage of internet services will benefit health and education facilities in the newly covered areas, as would improvements in power reliability</i>	0 None	The project is stand-alone and has no significant linkages with other infrastructure.
	1 Low	The project has some linkages with other infrastructure, but these are not considered critical.
	2 Medium	The project has linkages with other infrastructure which are significant.
	3 High	The project forms a vital part of a network and/or has synergies with other infrastructure that are of major importance.
Optimal use of existing infrastructure <i>Does the project focus mainly on the rehabilitation, replacement (at same capacity), or upgrading capacity of existing infrastructure, or on entirely new infrastructure to address unmet demand?</i>	0 New	The project involves entirely new infrastructure.
	1 Upgrade	The project involves replacing existing infrastructure with upgraded capacity.
	2 Replace	The project involves replacing existing infrastructure like for like.
	3 Rehabilitate	The project involves rehabilitating existing infrastructure to maintain the same capacity.
Urgency of the project <i>What will be the consequences in terms of capacity or coverage of infrastructure services if the project doesn't proceed?</i>	0 Negligible	Minimal adverse consequences for the delivery of essential infrastructure services if the project is delayed. Project is not urgent.
	1 Minor	Some adverse consequences if the project is delayed.
	2 Moderate	Moderate level of adverse consequences if the project is delayed.
	3 Serious	Serious adverse consequences for the delivery of essential infrastructure services if the project is delayed. Project is urgent.

O&M = operations and management.

Note: In assessing impacts of candidate infrastructure projects, avoiding a deterioration in the services provided by infrastructure is valued in a similar way to expanding services.

Source: Authors.

Preferred Approach: Guidance on “potential for economic viability” criterion

The “potential for economic viability” criterion is often difficult to assess when projects are at the concept stage and little feasibility assessment has been undertaken. Table III.7 indicates the annual level of net benefits (benefits minus ongoing costs such as maintenance) needed to recover

the initial capital cost of a project and generate an internal rate of return (IRR) of 6%, for varying project capital costs. This example applies discounted cashflow analysis and assumes a project life of 20 years. The aim of the example is to put in perspective the flow of net benefits required to generate an acceptable rate of return for a project when projects are at an early stage of development. The table also shows the annual level of net benefits required for the recovery of the capital cost over the life of the project, without discounting.

Table III.7. Net Benefit Stream Required for Economic Viability

Project capital cost (\$ million)	Annual net benefits required for IRR of 6% (\$'000) ⁽¹⁾	Annual net benefits required to recover capital costs (\$'000) ⁽²⁾
1	90	50
5	450	250
10	900	500
15	1,350	750
20	1,800	1,000
25	2,250	1,250
30	2,700	1,500

Note:

1. Based on discounted cashflow over 20-year economic life and a target 6% internal rate of return (Criteria score = 3)

2. Annual net benefits (undiscounted) required to recover capital cost investment over 20-year economic life (Criteria score = 2)

Source: Authors.

The steps involved in making a more **informed judgment** of the potential for economic viability of a project concept include:

1. Applying the table above and the estimated capital cost of the project to estimate the annual level of net benefits required to recover the capital cost of the project and generate an IRR of 6% (which equates to \$90,000 per \$1 million of capital cost). Is our project likely to generate this annual level of net benefits?
2. Expressing this amount in per capita terms, by dividing the estimate from 1) above by an estimate of the population served by the project. This gives an estimate of the annual level of net benefits per project beneficiary needed to generate an IRR of 6% for the project. Is this level of net benefits per beneficiary likely to be achievable for our project?
3. A further perspective on potential for economic viability can be obtained by reviewing the results of economic analyses undertaken for projects of a similar type which have been the subject of more detailed feasibility studies. Have similar projects been shown to be economically viable?

In this example, projects with good prospects of achieving an IRR of 6% or above would receive a score of 3 for this criterion. The target level of annual net benefits for a score of 2 (involving recovery of the capital cost over the life of the project, without discounting) would be just over \$50,000 per \$1 million of capital cost, which again could be calculated per project beneficiary to aid understanding. A score of 1 would be applied when annual net benefits were lower than this level, and a score of 0 when there are no significant economic benefits, and the project is being pursued for other reasons.

This example uses a threshold internal rate of return of 6%, and an estimated project life of 20 years. Similar calculations could be made varying these assumptions if this was considered appropriate in a particular national context.

Further guidance on the economic analysis of projects is provided in **Section III.8.2**.

4.4 Set Weightings

Weighting scores can increase or decrease the emphasis on a particular criterion or objective when combining multiple scores from one level of the MCA to determine a consolidated score for the project. A consolidated impact score provides a means of ranking and grouping projects for more detailed analysis.

For simple scenarios, MCA weights are applied equally to all criteria if they are considered to be of equal importance to the investment's outcomes or are appropriately differentiated so as not to bias the analysis. In the "preferred practice" framework above (**Table III.6**) there are four objectives, each having three scoring criteria. In a simple scenario, each criteria score would be weighted by 33.3% (1/3) to give an aggregated score for the objective which would be weighted by 25% (1/4) to give an aggregated score for the project.

In more complex applications, MCA weights are suitable to place greater emphasis on some criteria, such as projects which generate an economic return, particularly important in a time of economic recovery. Weights could also be adjusted to reflect any changes of emphasis in national development objectives.



There are a variety of tools for developing weights through stakeholder engagement; however, care should be taken not to add too much complexity to assigning weights. It is recommended that weights be derived by the Lead Agency in consultation with the Infrastructure Committee using qualitative factors and discussion. Weights should be refined, tested, and finalized during the sensitivity assessment stage (Section III.7.3).

III.5

Assemble Long List of Projects

In most situations, a pipeline of infrastructure projects will exist within agencies, finance, and infrastructure ministries. The NIIP process generally provides an opportunity to reconcile, amalgamate, and expand on these disparate datasets. The result is a centralized, consolidated list of infrastructure projects over the next 5–10 years and a strengthening of processes for keeping this information updated.

5.1 Identifying Projects

This step in the NIIP development process is about capturing the list of candidate infrastructure and public asset projects. Where countries have robust development strategies that cascade into sector and institutional/corporate plans and robust asset management plans, the task of assembling the project list is more straightforward.

For countries with less developed strategic planning frameworks, the task of assembling the long list of projects involves a greater degree of stakeholder consultation and engagement.

On some occasions, the NIIP process has also involved the provision of consulting services to aid in setting up best practices for project identification. For example, in Nauru (2019), the NIIP process included the creation of an Infrastructure Condition Assessment Methodology to identify assets which were nearing or had reached the end of their useful life and required capital maintenance. However, these institutional strengthening activities should be seen as additional support and not part of the generic NIIP process.

The generic process of assembling the long list typically involves the following steps.

- Step 1:** Conduct a workshop with participating entities to present the NIIP process, coverage, requirements, etc. Discuss drivers for infrastructure projects. Identify and discuss any existing project databases or project lists.
- Step 2:** Circulate project capture spreadsheet (see below) and have agencies populate from sector and institutional/corporate plans
- Step 3:** Assemble into a consolidated database and check for completeness (gap assessment)
- Step 4:** Conduct a second workshop with participating entities to review the long list, discuss gaps in data supplied and validate the list for completeness.

Section II.2.3 provides guidance on what is considered a project in the NIIP, and this would be clarified at the initial workshop (step 1 above).

5.2 Compiling the Long List of Projects

A key deliverable from the NIIP process is a consolidated list of “all” infrastructure project needs over the next 5–10 years. This is typically held in a spreadsheet format with a standardized set of fields to help interrogate the data. The primary goal of a NIIP is that this register becomes a complete view of ongoing, committed, and proposed projects across sectors and is maintained and kept current by a central unit/committee/agency.

It is recognized that existing project lists will be maintained for purposes not related to NIIP: the most common examples would be the budget spreadsheets maintained for public asset financing, project management lists for committed and ongoing works, development partner projects and the like. It is envisaged that the NIIP pipeline list of projects draws from these existing lists and builds rigor around their completeness, breadth, and upkeep through centralization.

Preferred Approach: Central Database of Infrastructure Projects

To achieve this goal, the central database needs to contain fields which describe the project, its prioritization criteria (and results), responsibilities, status, etc. Consideration also needs to be given to the temporal nature of this dataset and how updates are tracked (e.g., database versions and metadata fields).

Table III.8 below provides the typical fields expected in the database. Note that as a project matures and moves through the delivery cycle (inception > planning > prioritization > funding > approval > design, etc.) a greater level of information becomes available, and it is expected that processes will be established to capture this information and update the project database.

Table III.8. Structure of Central Project Database (Spreadsheet)

Field ¹	Description
PROJECT ATTRIBUTES	
Sector Code	The primary sector the project falls within, e.g., Energy, Ports, etc. Further information on typical sectors found in NIIPs is included in Section II.2.2 .
Project Type	The classification of the project (refer Section II.2.3)
Location Code	The island, province, village where the project is located
Project ID	Unique code for the project if applicable
Project Name	A short title for the project
Project Description	A longer description of the project
PROJECT MANAGEMENT	
Lead Agency	The primary agency/department/entity responsible for delivering the project
Other Agencies	Other key entities involved in the delivery of the project or impacted by the project
Status	The life-cycle status of the project, e.g., planned, funded, ongoing, etc.
FINANCIAL	
Funding Source	The most likely funding source for the project (or the actual source if secured)
Cost Estimate	The project cost estimate. Refer to the preferred approach within this section (below).
Estimate Quality	The reliability of the cost estimate. This is expected to improve as projects get closer to budget approval. Suggested domain values for this field: <ul style="list-style-type: none"> - Excellent: <i>Engineering level</i>. Scope and design parameters known - budget level estimate built up from unit costs. - Good: <i>Feasibility level</i>. Scope defined.

Field ¹	Description
	- Fair: <i>Rough order cost</i> . Scope reasonably defined. Estimate based on engineering judgement. No breakdown. - Poor: <i>Order of Magnitude</i> . Scope not well defined. Cost indicative only.
[Cost Breakdown]	Breakdown of cost by phase (refer PCN case example #8). Note that less detail will be available for projects in the 3- to 10-year horizon. Similarly, a greater level of cost information will be held in cost-benefit analysis spreadsheets as projects move toward the budget approval stage.
Estimated Start	The forecast date(s) the project is expected to start construction (or reach the different delivery stages, e.g., planning, design, tender, construction).
[Forecast]	A forecast of expenditure over the 10-year timeframe of the NIIP. This is a very broad estimate to help inform the funding strategy (if developed)
ECONOMIC BENEFITS	
Benefit Stream	Description of the expected economic benefit stream(s) from the project. The specificity of this description will improve as business cases are prepared for budget approval. Refer Section III.8.2 (e.g., 5% reduction in maintenance costs, 10% revenue growth, 10% reduction in infrastructure user costs).
<i>Net Benefits</i>	Annual net benefits (benefits minus costs) estimated once the project is operational (Table III.7 allows this to be compared with the annual net benefits required (i) to generate an internal rate of return of 6%, and (ii) to recover the capital cost of the project without discounting).
<i>Benefit/Pop</i>	The annual net benefit figure above expressed in per capita terms, dividing by the population served by the project (beneficiaries). This can then be compared with the per capita figure calculated using Table III.7, to judge whether the project is likely to be economically viable.
PRIORITIZATION	
[Impact Scores]	The register will generally only store the final scores assigned against the Environmental, Social, Economic and Other prioritization criteria.
[Complexity Scores]	Final complexity scores (refer Section III.7)
[Priority Group]	Grouping criteria for projects based on their readiness, complexity, impact, and the like.
Ranking	The ranking of project within a priority group, program, sector, or other rational grouping.
METADATA ²	
Last Updated	Date the project information was last updated
Updated By	The individual or unit that provided the update
Comments	Any information supporting the latest update (e.g., a change in priority, budget, forecast, etc.)

Notes:

1. Where fields are in **[brackets]**, this signifies that they may constitute two or more fields based on the local context, process maturity, and planned use of the database. For example **[forecast]** is likely to be 10 columns, holding expenditure forecasts for each year of the program.

2. Versions of the database/spreadsheet would normally be saved to provide a history of updates. The metadata fields provide details on the most recent update. Fields in **[italics]** are only likely to contain information for nearer-term projects where business cases have been developed to support budget approval.

Source: Authors.

Preferred Approach: Developing basic cost estimates

Guidance on preparing basic cost estimates for projects at the concept stage is provided in *Methodology for Condition Assessment of Public Sector Infrastructure Assets in Pacific Island Countries* (PRIF, 2020). Estimates are provided of unit costs for asset replacement for buildings, roads, bridges and culverts, runways and taxiways, wharfs and jetties, coastal protection structures, water and sewer infrastructure, electricity infrastructure, and telecommunication infrastructure. Unit costs can be estimated for a particular country by:

- a) Taking the base unit cost listed in the report (presented in 2019 US dollars and based on costs in Fiji).
- b) Multiplying the base cost by the cost escalation factor provided in the report for each country (refer Table 4-2 on page 36 of the report, which accounts for variations from country to country in freight and local construction costs).
- c) Converting from US dollars to local currency.
- d) Allowing for inflation in freight and local construction costs since 2019 (noting that there has been a significant escalation in these costs during the pandemic as supply chains have been disrupted).

5.3 Validating the Long List (Gap Assessment)

A review of recent NIIPs (**Table II.1**) highlights the diversity of sectors and the number of projects included in different NIIPs across the pacific. As the NIIP process becomes more integrated with governments' project management processes we generally see a greater number of sectors and projects included. There is also an upward trend in volumes as governments progress their second or third iterations of a NIIP. Some NIIPs may have as few as 30–40 projects while more developed and expansive NIIPs could contain more than 150 projects in the long list.

Regardless of the defined extent of NIIP coverage (sector, geography, project scale/definition), it is important for the lead agency to check that the project long list adequately represents the full coverage and is not disproportionately represented (biased). This can happen when a sector or geographic area is more vocal or more advanced in their planning.

This step in the NIIP process completes a broad diagnostic check by comparing the number and scale/budget of projects across sectors. Some useful "balance/gap" diagnostics include summing the total number of projects and budget (\$) and:

- Group by island or administrative area – report \$ divided by population
- Group by sector – report \$ divided by sector expenditure
- Group by department – report \$ divided by department expenditure
- Group by impact area (environment, social, economic) or strategic goal – report \$

If gaps are apparent, the lead agency should go back to the relevant agency/sector to ensure all potential projects have been identified. Where there might be a gap identified against a particular impact/benefit area (e.g., insufficient forecast expenditure on climate resilience projects) then the Lead Agency would likely be required to convene additional planning meetings with key sector stakeholders to highlight the gap and identify additional projects.

Case Example # 7: Compiling a Consolidated Database of Infrastructure Projects Cook Islands

This case example is presented to demonstrate the process followed to identify candidate projects and populate a centralized spreadsheet of projects for prioritization.

To assemble the long list of projects, the project team amalgamated known project lists from:

- (i) The long list of projects from the 2015 NIIP.
- (ii) The annual budget (and its 4-year funding commitment).
- (iii) The infrastructure project list maintained by the Cook Islands Investment Corporation and the Project Coordination Committee.
- (iv) Corporate plans of lead infrastructure agencies.
- (v) Strategic reports and studies (e.g., Cook Islands CCCP 2018).
- (vi) Interviews with lead infrastructure agencies.

Understandably, the same projects were represented across the different lists; however, they were not always given the same name or described in the same way so there was a reconciliation required. Many of the projects had grown in scope and size; furthermore, for several of the projects, the feasibility study had been separately scheduled as its findings would likely dictate the scope of the main capital project.

A workshop was held to review the list and identify any missing projects. The final project long list spreadsheet modified one already in use by the Project Coordination Committee and reconciled all naming and details for 136 infrastructure projects and studies that could feasibly start within the next 10 to 15 years.

Extract from the central project register

	A	B	C	D	E	F	G	H	I	J	K
1	Cook Islands National Infrastructure Investment Plan (2021 Release)										
2											
3	Sector Code	Lead Agency	IMP Agency	Program	Project Name	Brief Description	Project Type	Status	Island Served	Best Estimate	Funding Source
34	Buildings	ICI	ICI	Pa Enua Cyclone Shelter Program	Penrhyn Cyclone Shelter	Stand alone cyclone shelter for public	New	ON	Penrhyn	500	CIG
35	Buildings	ICI	ICI	Pa Enua Cyclone Shelter Program	Rakahanga Cyclone Shelter	Stand alone cyclone shelter for public	New		Rakahanga	2,050	CIG
36	Buildings	ICI	ICI	Rarotonga Cyclone Shelter Program	Cyclone Shelters Structural Review	Pa Enua and Rarotonga - Research and Investigation	Study		Cook Islands	300	CIG
37	Buildings	ICI	ICI	Rarotonga Cyclone Shelter Program	Rarotonga Cyclone Shelter Upgrade	Renovating the deficient shelters on Rarotonga	New		Rarotonga	30,000	
38	Buildings	CIIC	CIIC	Rarotonga Government Buildings	Te Atukura Parliament and Ministerial Offices	New Parliament & Ministerial Offices	New		Cook Islands	10,000	
39	Buildings	CIIC	CIIC	Rarotonga Government Buildings	Vaikapuangi Government Office Complex	All encompassing Govt building proposal downtown	New		Cook Islands	56,000	
40	Coastal	ICI	ICI	National Coastal Protection Program	Pa Enua Coastal Erosion Protection	Assessment and construction	Study		Cook Islands	1,200	
41	Coastal	ICI	ICI	National Coastal Protection Program	Northern Coastal Erosion and Protection	Various island requirements	Upgrade		Northern	8,000	GCF
42	Coastal	ICI	ICI	National Coastal Protection Program	Pukapuka Causeway Protection	Upgrade of causeway road due to higher sea activity	Upgrade		Pukapuka	1,000	
43	Coastal	ICI	ICI	National Coastal Protection Program	Pukapuka Cyclone Shelter Access Road	To provide a suitable vehicle access to shelter	Upgrade	CO	Pukapuka	500	
44	Coastal	ICI	ICI	National Coastal Protection Program	Aroa Stream Embankment	Upgrade of stormwater system part of island wide P	Upgrade		Rarotonga	500	CIG
45	Coastal	ICI	ICI	National Coastal Protection Program	Avana Coastal Protection	Small CCAF project started - to be extended.	Upgrade		Rarotonga	10,000	
46	Coastal	ICI	ICI	National Coastal Protection Program	Coastal Management and Mitigation	Critical zones around island to be scoped and design	Study		Rarotonga	10,000	
47	Education	MFEM	MFEM	National Tertiary Campus Improvements	USP Campus Construction	Campus, dorm and faculty housing (Scoping study to)	New		Cook Islands	12,500	
48	Education	MOE	MOE	National Tertiary Campus Improvements	Education Infrastructure Master Plan		Study		Cook Islands	200	
49	Education	CIIC	CIIC	Rarotonga Education Infrastructure Progr	Tereora College Redevelopment Stages 2 and 3	Stage 2 upgrade of the academic learning centres. St	Upgrade		Rarotonga	24,000	
50	Education	CIIC	CIIC	Rarotonga Education Infrastructure Progr	Tereora Pa Enua Hostel	Hostel for the Pa Enua students	New		Rarotonga	1,000	

III.6

Develop Project Concept Notes and Screen Projects

The project concept note provides a meaningful summary of the key elements of a project proposal, meeting the information requirements for the initial screening of projects and for project prioritization. Concept notes should be prepared for all projects on the long list of candidate projects for the NIIP.

6.1 Designing the PCN

The primary purpose of the PCN is to meet the information requirements for the initial screening of candidate projects for the NIIP and for the conduct of project prioritization using the MCA. Concept notes also play a valuable role as a succinct and systematic source of information on candidate infrastructure investment projects, suitable for briefing potential financing partners. This role is strengthened if project concept notes link directly to a project database and project pipeline managed by government.

The project concept note should also be capable of extension to provide a summary of the full business case for the project when this is developed. Steps involved in designing a template for the concept note are:

Step 1: List fields required in the concept note, which would be expected to include (refer **Table III.8**):

- a) Project title
- b) Project type (new infrastructure, or upgrading, renewal or rehabilitation of existing infrastructure)
- c) Location
- d) Project description
- e) Alignment with national development strategy
- f) Resilience (to climate change, natural disasters)
- g) Regulatory requirements (e.g., environmental impact, spatial planning, building code)
- h) Project cost estimate (capital and recurrent)
- i) Roles and responsibilities
- j) Timing
- k) Strategic importance for prioritization
- l) Potential sources of funding

Step 2: Research templates already in use and assess their suitability, either in their current form or adapted to meet the requirements of the NIIP.

Step 3: Finalize the template for the project concept note.



It is recommended that a concept note be prepared for all candidate projects being prioritized. The concept note should be adapted to national circumstances and should include information similar to that listed in Step 1 above.

Case Example # 8: Format of a Project Concept Note

Cook Islands

This case example is presented to demonstrate the type of information which can be presented on a single page PCN. These PCNs provide structure to the prioritization process.

The concept note (below) built upon the established *Te Tarai Vaka* project management process, and captured the information required for the project prioritization. Note that the completeness of the PCN is improved over time, especially for projects still in their conceptual stage.

Name of Project	{ENTER PROJECT TITLE}					
Project Type <i>Refer NIIP guidance</i>	<input checked="" type="checkbox"/> Build New Infrastructure	<input checked="" type="checkbox"/> Upgrade Capacity	<input checked="" type="checkbox"/> Refurbish or Replace Existing	<input checked="" type="checkbox"/> Study or Consulting		
Location of Work	{approx. location - island/village/road}					
Anticipated Timing	{summarise what stage are we at with scoping the work, when will it be designed and delivered}					
Project Description <i>Include a brief commentary on the purpose of the project, its importance and consequence of it not proceeding</i>	{Brief description of work}					
	{Why is it important? What is its purpose, key objectives, and expected outcomes?}					
	{What is the impact of the project not proceeding?}					
Programme Alignment / Strategic Importance	{Describe any dependencies and important sequencing. Is this project <u>is</u> part of a wider programme? Does it have specific strategic importance?}					
Roles and Responsibilities	Lead Unit		Coordination with Other Departments			
	{Lead Agency and Unit responsible}		{Supporting agency(s) and role}			
Climate Resilience <i>Refer NIIP guidance</i>	{Describe any impact climate change might have on the durability of the infrastructure}					
	{Are there additional costs (%) to make the infrastructure climate resilience?}					
Cost Estimate <i>Include estimate of capital costs and any ongoing operating/maintenance costs post-construction</i>	Cost Breakdown		2021 (Year 1)	2022 (Year 2-5)	2026 (Year 6-10)	Totals
	Feasibility / Design					
	Construction					
	Ongoing (O&M)					
	{Include any commentary/assumptions on cost table above – particular attention to any additional costs relating to ongoing operation and maintenance of new or upgraded assets. Make special note if costs are uncertain and the need for further in-depth analysis – either CBA, feasibility study or business planning}					
Approach to Market Source(s) for Funding	{How will the project be funded, what pre-approvals are in place and what will be the delivery mechanism}					
Strategic Importance for Prioritisation <i>Refer TVP concept note guidance document and include key points relevant to assessing project scale in terms of complexity and impact.</i>	Overall Complexity and Risks					
	– {Complexity} <i>Is the nature of work new to CI? Does it require a significant amount of offshore expertise?</i>					
	– {Sustainability} <i>Are there ongoing liabilities? Do we have the experience on-island to operate?</i>					
	– {Other Risks} <i>What are the potential risks and mitigation measures. Are there remaining uncertainties?</i>					
	Positive Impacts and Benefits					
– {Social benefit} <i>How many people will benefit from the project, from which part of the community?</i>						
– {Economic benefit} <i>What financial benefits will be derived or what disbenefits will be avoided?</i>						
– {Environmental benefits} <i>What environmental benefits will be derived or what disbenefits will be mitigated?</i>						
	–					
Concept Note By:	Prepared By: {Concept Note Author, Position}			Date: {date prepared}	Version:0.1	

For the Tonga NIIP 3 (2021), the established government Project Proposal Application (PPA) template was used as the starting point for the PCN. The PPA template already catered for staged development of the project, both as a concept note and later as a full project proposal. The PPA template was adapted to include the full MCA as a component part, with scoring undertaken initially by the agency submitting the project proposal and then reviewed by the central agency coordinating the NIIP in order to determine the final scores. While the resulting PPA including MCA scoring was a significantly larger document than the one-page PCN used in many other NIIPs, this was seen as an important breakthrough in mainstreaming NIIP into the government planning process. The approach to MCA scoring, engaging the agencies submitting projects and encouraging dialogue with the central agency reviewing the scores, was an important step forward in achieving government ownership of the NIIP.

6.2 Initial Screening

The screening of PCNs is designed to identify any obvious shortcomings that indicate a project should not proceed to prioritization in its current form. Screening does not amount to an appraisal of the project; application of the MCA in project prioritization following screening is a form of rapid appraisal, while a more complete appraisal of projects is undertaken later in the project cycle when project business cases have been prepared (see **Section III.8**).

Earlier steps in **Section III.3** (ensuring that sector overviews, including the identification of infrastructure needs, are comprehensive) and **Section III.5** (ensuring that the long list of candidate projects is balanced and without significant gaps) give confidence that the long list is representative of all sectors covered in the NIIP.

Before moving on to prioritization, candidate projects in the long list are usually screened to ensure:

- consistency with national development objectives;
- that they are needed in the next 5 to 10 years; and
- that consultation has commenced in relation to relevant regulatory processes including environmental impact, physical planning requirements, building codes, etc.

The screening check is on a **pass/fail** basis, with all requirements needing to be met before the project moves on to prioritization. Projects failing screening are referred to the relevant agencies responsible for the project.

Given that many candidate projects are likely to be still at the concept stage, the check relating to regulatory processes generally requires initiation of consultation rather than reaching an outcome in relation to these processes.



It is recommended that, prior to project prioritization, the long list of candidate infrastructure projects be subject to a screening process, which, at a minimum, covers consistency with national development objectives, need for the project in the next 5 to 10 years, and commencement of consultation in relation to relevant regulatory processes.

Case Example # 9: Extensive Screening of Projects Prior to Prioritization

Palau

This case example is presented to demonstrate a reasonably advanced project screening process. This level of information is unlikely to be available for candidate projects in many countries, and the approach includes elements normally incorporated as criteria in the MCA prioritization but could be considered in cases where candidate projects are more fully developed.

The Palau NIIP process included a reasonable extensive screening process to confirm project “readiness”. This required the projects to be cleared by:

- (i) the judiciary branch for the legal implications;
- (ii) the Ministry of Finance for recurrent cost implications;
- (iii) the Office of Administration for questions regarding capacity, cost-efficiency, and the potential impact on public services;
- (iv) the Ministry of Public Infrastructure; Industry and Commerce for any concerns about technology and regulatory requirements;
- (v) the Ministry of Community and Cultural Affairs for potential social impacts;
- (vi) the Ministry of Natural Resources, Environment and Tourism regarding potential environmental impacts and resilience to climate change and natural hazards; and
- (vii) the Bureau of Land and Survey to confirm that the required land is available.

Project Readiness Checklist (Table 6)

Check	Responsible Office
1. Is it legal?	Judiciary Branch
2. If the private sector is investing is it from a sound proponent?	Judiciary Branch
3. Is sufficient funding allocated to preventative maintenance to deter premature impairment of the investment?	Ministry of Finance
4. Does the central government and, or SOE have the capacities to procure, manage and maintain and if not, have sufficient funds been allocated to build these capacities?	Office of Administration and Ministry of Finance
5. Is this project the most cost-efficient alternative for provision of public services or are there more cost-efficient alternatives?	Office of Administration, Ministry of Finance and proponent Ministry.
6. Is it of proven technology?	Ministry of Public Infrastructure, Industries, and Commerce
7. Have gender sensitive, equality and social inclusion (GESI) measures been incorporated?	Ministry of Community and Cultural Affairs, Bureau of Aging and Gender
8. Does it meet all the government’s regulatory requirements such as building codes and zoning restrictions?	Ministry of Public Infrastructure, Industries, and Commerce
9. Does it meet all the government’s environmental regulations?	Ministry of Natural Resources, Environment and Tourism Environmental Quality Protection Board
10. Is the project design resilient to withstand climate change impacts and natural hazards?	Ministry of Natural Resources, Environment and Tourism and Ministry of Public Infrastructure, Industries, and Commerce
11. Is this project necessary to remove constraints in providing critical public services? Will the quality of public services suffer and reach an unacceptable level in the absence of this project? Or, will the project result in significant improvement in required public services?	Office of Administration
12. Is this project required in the immediate future (next 10 years) or can the project investment be deferred without significant impact on public services?	Office of Administration
13. Is the necessary land available?	Bureau of Land and Survey
14. Does it have a potentially “large impact” on public revenues and the economy, the environment, social and, or cultural priorities that will require a detailed assessment of EIRR and, or social, cultural or environmental impact and, or have objections been raised?	Ministry of Finance, Ministry of Natural Resources, Environment and Tourism, Ministry of Community and Cultural Affairs, and Bureau of Domestic Affairs

III.7

Conduct Multi-criteria Prioritization

An MCA approach to prioritization allows decision makers to assess a full range of economic, environmental, social, and financial impact criteria to determine which priority projects qualify for further development.

The aim of the assessment is for the process to be transparent and robust with a high level of consensus for the results across the disparate projects and sectors covered by the NIIP.

7.1 Multi-Criteria Prioritization Process

Steps involved in conducting the multi-criteria analysis and project prioritization are:

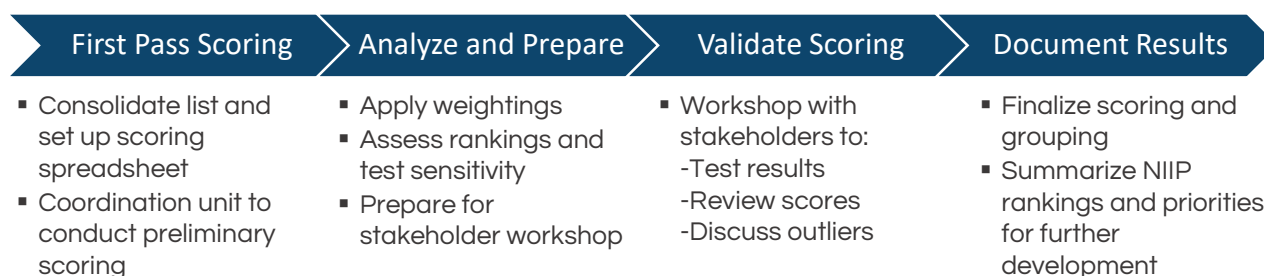
- Step 1:** Ensure the components (checklist) of all MCA framework components are complete, namely:
- Workshop and agree MCA assessment criteria (Section III.3)
 - Finalize the MCA scoring criteria (Section III.4)
 - Assemble the project long list and check for completeness. Follow-up with project leads to gather additional information (Section III.5)
 - Develop concept notes for projects requiring prioritization including cost estimates and assessment of MCA impact criteria (Section III.6)
- Step 2:** First pass prioritization, refine weightings, test sensitivity and develop methodology for validating the prioritization (Section III.7.2).
- Step 3:** Analyze results to ensure they are in line with expectations and consistent with the expected program drivers and funding envelopes. Finalize program for further development (Section III.7.3).
- Step 4:** Conduct MCA validation workshop, apply weightings, and review results (Section III.7.4).
- Step 5:** Document the results for inclusion in the NIIP and present investment scenarios to key stakeholders (Section III.7.5).

Design of the MCA framework has been presented in Section III.4 and by this stage the criteria and scoring methodology would have been validated and tested by the Lead Agency and endorsed by the Infrastructure Committee or Steering Group and key stakeholders.

When there is a small number of projects (or options) being evaluated using an MCA methodology, it is generally accepted best practice that scoring will be done in a workshop setting with results being compared and ratified in that scoring session. However, as most NIIPs are required to assess and prioritize more than 50–70 projects, a phased approach is necessary.

Preferred Approach: Conducting MCA Scoring

Given the large number of projects being scored, the process is generally completed in four stages:



By following this approach, the Coordination Unit, is assigned responsibility to complete the first pass scoring and then engage with the wider group of stakeholders to validate the scoring before preparing the final ratified list of NIIP rankings and priorities for further development.

7.2 Conduct First Pass Scoring and Sensitivity Analysis

Scoring Process (First Pass with Coordination Unit)

Completing an MCA assessment is not a highly quantifiable and formulaic exercise. The goal, however, is to remove as much subjectivity as possible in both the way we structure the framework (criteria and scoring) and in the way we validate the results.

The following generic MCA example (**Table III.9**) is based on reviewing a small number of design options for a single project and determining the best option to progress based on the “heat map” of results. It serves to demonstrate an approach to using heat maps as one means of assessing results and looking for outliers and trends.

Table III.9. Reviewing MCA Ratings (example)

Objectives and criteria	Objective Weights	Option Scores			
		1	2	3	4
Objective 1: Efficiency and reliability	0.4	4.1	3.3	3.0	2.6
Objective 2: Health and Safety	0.4	3.6	3.1	5.0	3.8
Objective 3: Cost and related risks	0.2	2.5	2.5	3.5	2.5
Weighted Average Score	1.0	3.58	3.06	3.90	3.06
Rank		2	3	1	3

MCA = Multi-Criteria Analysis.

Source: Infrastructure Australia’s “Guide to Multi-Criteria Analysis” (2021), Table 13.

An adaptation of the above example can be applied to the NIIP process if we were assessing the range of scores assigned by the Coordination Unit in its first pass scoring of projects. Rather than the heat map columns representing Options 1 to 4, they would represent the scores of the evaluators. If that were the case, we would be able to visually see where there were inconsistencies between scorers and any outliers and inconsistencies could be discussed further. These inconsistencies could result from:

- Projects being inadequately described in the concept notes
- Some participants having a greater level of knowledge on the scope of some projects
- Bias of participants toward a particular objective
- Scoring criteria and definition of thresholds being too vague or ambiguous

It is important for the initial scoring and validation of the scores to be done **before** weightings are applied and rankings calculated. Viewing the final ranking at this stage can bias the scoring and should only be done after individual scores are assigned and reviewed and the sensitivity of the MCA is tested.

Sensitivity Analysis

For any MCA framework, it is important to test the results of the analysis to understand how they perform under different conditions. Because MCA does not have fully defined and quantitative parameters like a cost-benefit analysis, the MCA results testing process is more open-ended and flexible.

For the sensitivity analysis, the Lead Agency should focus on changing the scoring values, definitions and weightings for the criteria that are likely to be most material in driving the option ranking and where there is thought to be the most uncertainty. The aim is to test the resilience of the MCA rankings and robustness of the MCA criteria and weightings. The outcome is a defensible MCA framework.

While there are off-the-shelf products that support sensitivity testing, the recommended simplicity of having 12 or fewer criteria allows the Lead Agency to conduct this analysis in a spreadsheet using an iterative approach of adjusting, reviewing, and refining scores and weightings.

7.3 Analyze Results

Analysis of the MCA output is done through several lenses. One of the key applications and benefits of an MCA is its ability to compare a range of disparate multi-sector, multi-faceted projects on a common scale, namely the average weighted impact score for the project and its associated impact ranking as demonstrated in Table III.10:

Table III.10. Reviewing Project Scores and Rankings (Example)

Project	Budget	Objective*				Weighted Score	Impact Ranking
		1	2	3	4		
Weighting		35%	25%	20%	20%		
Project # 1	\$2m	2.0	1.2	1.3	2.9	1.84	3
Project # 2	\$23m	2.5	2.0	0.5	2.2	2.02	1
Project # 3	\$5m	1.5	1.1	2.1	2.2	1.66	4
Project # 4	\$9m	1.5	1.5	1.5	0.8	1.36	6
Project # 5	\$15m	2.2	2.1	1.2	2.0	1.94	2
Project # 6	\$20m	1.5	1.5	1.8	0.6	1.38	5
Project # 7	\$20m	1.2	0.9	1.0	1.1	1.07	7

Note: Objective 1-Economic, 2-Social, 3-Environmental, 4-Alignment.

Source: Authors.

Table III.10 demonstrates how objective scores (aggregated across criteria and participants) can be weighted to give an overall average **Weighted Score** and project **Impact Ranking** based on that

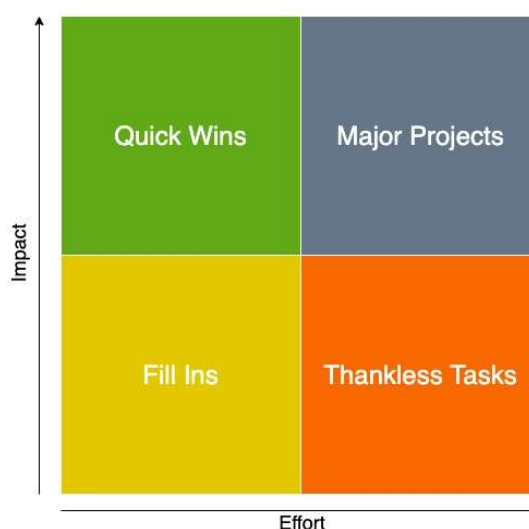
score. However, this is not the final ranking of priority projects for the NIIP, it is the ranking of projects assessed to deliver the greatest level of impact based on the assessed MCA criteria.

In order to determine the top ranked, **high priority projects for further development**, we need to apply several different analytical lenses and filters across the results.

Assess Impact vs Effort

An **Action-Priority Matrix** (APM) is a simple diagramming technique that helps you choose which activities make the most efficient use of your time. The matrix plots the **Effort** to undertake the activity (x-axis) against the **Impact** (y-axis) the activity will have (Figure III.3).

Figure III.3. Action-Priority Matrix (example)



Source: Action Priority Matrix: Identify the right opportunities to pursue, Think Insights
<https://thinkinsights.net/consulting/action-priority-matrix/>

Once plotted, activities can then be considered within four quadrants:

1. **Quick Wins** (*higher impact, lower effort*): These are generally the most attractive projects, because they give you a good return for less effort.
2. **Major Projects** (*higher impact, higher effort*): Major projects give good returns, but they are time-consuming and often difficult to deliver. This means that one major project can "crowd out" many quick wins.
3. **Fill-Ins** (*lower impact, lower effort*): These projects generally progress when they are foundational or part of a bigger program of related works; otherwise, they are delivered when time permits.
4. **Thankless Tasks** (*lower impact, higher effort*): Projects in this quadrant typically do not progress. Not only do they give little return, but they also soak up time that you should be committed to projects in the other three quadrants.

We recommend applying the APM to help assess and filter NIIP projects. The proposed MCA assessment criteria (**Table III.6**) have been designed to reflect the **impact** a project delivers. It is therefore appropriate to plot the average weighted score on the y-axis. The project **cost estimate** can then be used to represent effort, or, in more advanced scenarios, additional evaluation criteria could be developed as a measure of effort, for example, we could assess criteria such as:

- Complexity of the project (new technology, offshore expertise, materials, etc.)
- Scale of the project (budget, duration, number of agencies involved, etc.)

Refine List Considering Funding and Capacity Constraints

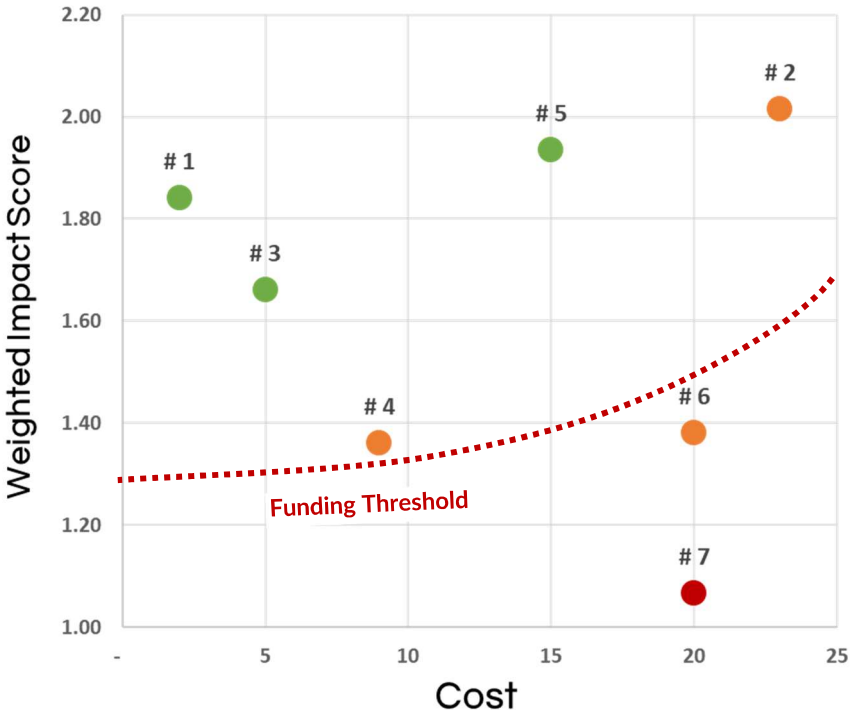
The APM technique above provides a useful lens to view and group projects. The first filter we apply to the full list of prioritized projects is to determine those we feel can be funded and implemented within the top-down funding envelope determined when developing the Investment Strategy (Section III.2.4).

Once the scale of the program to be funded and implemented is determined, a cut-off point for investment can be determined (Funding Threshold). As a minimum, the investment strategy will propose a funding envelope for the overall program. It may also provide direction on how this is apportioned across sectors and geographic location.

Each project can then be systematically checked again to ensure projects are sufficiently scoped, can conceivably be started in the next 10 years and that there is sufficient capacity to deliver the project when assessed against higher-ranked projects and the capacity of government to deliver. Those with lower rankings may be pushed out to future NIIPs. The analysis would start with the quick win and major projects and move to fill-ins if the funding cap is not reached.

Figure III.4 below demonstrates the concept when the impact scores for the projects in Table III.10 are plotted against the project costs (a simple measure of effort). The aim of the plot is to have discussions around projects at the boundary of the funding threshold. Under a constrained budget scenario, you may select the least-cost project #4 to go forward over project #6 even though it has a slightly lower impact score. Another benefit of this two-dimensional view of the MCA results is you can also have discussion around some of the major projects (top right) as to whether there is enough capacity to deliver a significant number of complex, high-cost projects—the question of balancing the program.

Figure III.4. Selecting Projects within Funding Thresholds (Example)



Source: Authors' adaptation of Action-Priority Matrix concepts.

The output from this step would be a list of near to medium term projects “identified for further development”.

Assess Against Program Objectives and Project Type

Another lens to apply when assessing MCA results, especially when many projects are *identified for further development*, is to look at the top-ranked projects by objective or project type. For example, we could rank the top five environmental, social and economic projects (based on the aggregated criteria score for each objective rather than the overall weighted impact score). Alternatively, we may look at the single criteria “Urgency of the Project” and validate those that scored a three (3) “Serious adverse consequences for the delivery of essential infrastructure services if the project is delayed. Project is urgent” are all on the **high priority list**.

We may also present and test the results of the assessment by ranking the top 10 projects by project type (rehabilitation, renewal, etc.). For this analysis, we would use the overall weighted impact score.

Criteria weightings can also be used to reappraise the rankings when there is a shift in focus for the program. For example, following the recent COVID-19 pandemic, there may be a greater focus on projects that generate tourism or have a strong economic return. Increasing the weighting of these criteria will change the program rankings. It is expected that the rankings of projects in the 10-year program are reviewed at least annually as more information about the project comes to light or as program priorities change. This ongoing management of the program is discussed further in Section 8.

Assess Against Sector and Geographic Location

A third and final lens to apply to the list of projects identified for further development is to assess whether the filtered list of projects still provides a balance of investment across sectors and geographic location.

The different lenses applied above will help identify the “**high priority projects for further development**”, namely those that can be realistically delivered in the next 10 years given the proposed level of investment available, the capacity of government (and the private sector) to deliver the works and giving due consideration to the balanced representation of projects across sectors, geographic location, and work type.



It is recommended that the Coordination Unit conduct an initial scoring of projects to test the MCA framework, refine criteria and weightings and conduct a preliminary analysis of the output to help frame the way results are presented in the validation workshop. The output from this stage would be a list of high priority projects identified for further development.

7.4 Conduct Validation Workshop

Once the Coordination Unit has assembled the first pass MCA rankings and analyzed the results, they need to prepare a summary of the proposed program for validation by the wider team of stakeholders, generally the main infrastructure entities covered by the NIIP.

Achieving a consensus on the final grouping, classification and ranking of projects in a 1-day workshop will be extremely difficult. It is better to strive for an agreement on the method, general scoring, and completeness of the list and capture any significant gaps or concerns which can be resolved by a smaller group. To achieve this, there are several activities that should be included within the validation workshop.

- a) **Investment strategy:** Findings from investment strategy including funding threshold, etc.
- b) **Review of long list:** Summary of the final list of projects, estimates costs, distribution by geographic location, sector, etc.

- c) **Validation and socialization of the scores:** Presentation of the MCA criteria and review of the scores. We should generally start with reviewing scores *by objective* (rather than seeing the overall project impact rating as this can bias the scoring). For this to be practical, it can either be carried out in breakout groups or in a combined situation, participants may be only asked to “challenge” no more than two project scores.
- d) **Consensus:** Conduct a survey at the end of the session to gauge the level on consensus of key workshop objectives:
- How comfortable are you that the MCA objectives and criteria reflect key prioritization requirements?
 - Are you aware of any projects that might be missing from the long list evaluated?
 - Do the assigned scores against each objective reasonably reflect the impact of projects you have reviewed?
 - How comfortable are you with the overall MCA framework used to assess the relative impact/importance of projects?

The results of the consensus scoring will give the Steering Group/Infrastructure Committee a level of confidence in the robustness of the NIIP program. If there is insufficient consensus, the Lead Agency may have to conduct a second workshop.

Project prioritization using the MCA framework represents a systematic and transparent approach to determining priorities. On occasion, governments may conclude that this technical approach misses key considerations and may amend priorities. This prospect becomes less likely the more engaged governments are in preparing the MCA framework. Any changes to priorities should be made transparently, with justifications documented. Publication of both the MCA-determined priorities and any amendments to priorities is an aid to transparency.

7.5 Document the Outcome

Final documentation of the MCA in the NIIP should provide sufficient information so a reader can understand the relative scores, and what evidence and judgments underpin them. It is not sufficient to only report the average weighted score; these should be traceable back to the underlying criteria scores. Furthermore, the PCNs need to provide sufficient commentary to explain the connection between the assigned scores and subsequent prioritization of projects for further development. Infrastructure Australia (2021) highlight the importance of adequately documenting the MCA framework and the results. They state that:

The documentation should be sufficient to adequately describe:

- *the MCA framework including:*
 - *the MCA objectives and how these were derived*
 - *the MCA criteria, with commentary showing how they adequately measure the objectives*
 - *the MCA criteria weights and how these were set*
 - *the MCA measures, and how these adequately cover the information needed to inform the scoring of the MCA criteria*
 - *the scoring framework, and specifically how this has been applied to each measure and criteria included in the MCA framework (score, description and threshold information)*
 - *the attributes of the core application of the MCA and descriptions of any tests applied, such as sensitivities and alternative scenarios*
- *the MCA results including:*
 - *option scores by objective, for the core application and any scenario and sensitivity tests*
 - *supporting tabulations (in an appendix) of the criteria scores and weights and the scores for the measures underpinning the criteria scores*
 - *the options’ ranking and recommendations about the shortlist that should proceed*
 - *commentary to adequately explain the basis for these findings and recommendations.*

III.8

Ongoing Management

The NIIP process does not stop with the adoption by government of the NIIP document. The plan needs to be implemented, and an improvement plan pursued so that the NIIP can be rolled over and sustained as an ongoing contributor to infrastructure investment planning



8.1 Taking NIIP projects forward

Priority projects identified in the NIIP are those on which project development will be focused. They are the projects identified as having the greatest potential to contribute to the achievement of national development objectives

Further development of priority projects typically involves the preparation of **more complete business cases** for projects by the agencies initiating them. There may be informal engagement with development partners at this stage in assessing the feasibility of projects, though formal engagement with development partners would await approval of the project for funding. Typically, business cases are then reviewed by the relevant central agency (which could be the finance ministry or the ministry responsible for national planning), before being submitted to decision-makers seeking approval for funding.

Gateway Decision Points

Section I.2 describes “where NIIPs fit in the project delivery cycle” and that a key aim of the NIIP is to support gateway Decision Point #1 (●) by providing a “list of priority projects for further development”.

However, the NIIP should also provide some level of commentary on how projects would proceed through the funding and development phase in preparation for Decision Point #2 (●).

Project Business Cases

The main artefact that supports Decision Point #2 is a project business case along with the supporting cost benefit analysis or cost effectiveness analysis. Improving the robustness of decisions at this gateway is entirely dependent on the quality of the supporting business cases and is an area targeted for improvement across the Pacific.

The business case is a logical elaboration/extension of the project concept notes submitted with the NIIP. These project business cases would typically include:

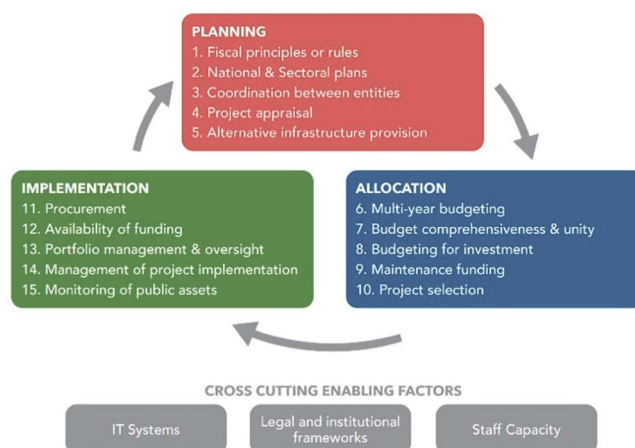
- Project description
- Project objectives and alignment with national development objectives
- Structure and organization (project components and institutional roles and responsibilities)
- Preliminary design (technical options and preferred approach)
- Project costing (capital and recurrent)
- Project viability (preliminary cost benefit analysis or cost effectiveness analysis)
- Project sustainability
 - Institutional (capacity of implementing and operating agency)
 - Technical (appropriateness of technology)
 - Financial (ability to meet costs of operation and maintenance)
 - Environmental (resilience, with particular reference to climate change and natural disasters)
 - Social inclusion (approach to gender equity and social inclusion)
- Compliance with relevant government regulations (spatial planning, environmental impact assessment, social safeguards, building codes, international obligations, etc.)
- Implementation plan (including approach to procurement and local content)
- Potential funding opportunities
- Arrangements for monitoring and evaluation

The central agency reviewing the business case would typically:

- a) Confirm that the project was approved for further development following prioritization in the NIIP.
- b) Check that the business case is complete.
- c) Check that the business case provides sufficient evidence of the alignment of the project with national development objectives, the viability of the project, and its sustainability.
- d) Contribute to the economic analysis of the project, where needed.
- e) Make recommendations to decision-makers in relation to project selection, based upon a clear set of selection criteria agreed by government and published.

In relation to the IMF PIMA methodology discussed in **Section III.1.2** (Figure III.1), the preparation and appraisal (and subsequent approval for funding) of the project business case represents a simplified approach to the Project Appraisal (#4) and Project Selection (#10) components of the 15 key practices or “institutions” set out in the methodology.

(Refer Figure III.1)



The PIMA questionnaire asks the following questions in relation to these components:

Project Appraisal: Are project proposals subject to systematic project appraisal?

- a. Are major capital projects subject to rigorous technical, economic, and financial analysis?
- b. Is there a standard methodology and central support for the appraisal of projects?
- c. Are risks taken into account in conducting project appraisals?

Project Selection: Are there institutions and procedures in place to guide project selection?

- a. Does the government undertake a central review of major project appraisals before decisions are taken to include projects in the budget?
- b. Does the government publish and adhere to standard criteria, and stipulate a required process for project selection?
- c. Does the government maintain a pipeline of appraised investment projects for inclusion in the annual budget?

8.2 Economic Assessment for Budget Approval

The *Cost-Benefit Analysis in World Bank Projects* study (WBG, 2010) investigated the application of cost-benefit analysis over the preceding 40 years (1970–2010) and a general observed decline in its application over the latter half of that period. The study drew two broad conclusions of relevance:

First, the Bank needs to revisit its policy for cost-benefit analysis in a way that recognizes the legitimate difficulties in quantifying benefits while preserving a high degree of rigor in justifying projects. Second, the Bank needs to ensure that cost-benefit analysis is done with quality, rigor, and objectivity: poor data and analysis misinform, and do not improve, results. Reforms are required to project-appraisal procedures to ensure objectivity, improve both the analysis and the use of evidence at appraisal, and ensure effective use of cost-benefit analysis in decision making.

Preparation of a project's Business Case by the relevant infrastructure agency provides a greater level of rigor than can be achieved when preparing the PCN and subjecting it to a rapid appraisal via the MCA framework. The Business Case allows for the application of more thorough economic analysis to the project prior to approving it for funding (see key steps below). This is unlikely to achieve the standards required to support applications for most development partner funding, but it can shed light on economic considerations relating to the project (and is an important step in building capacity in understanding and applying economic analyses). Business cases should include a basic level of economic analysis, though at least initially capacity building efforts in economic analysis are likely to be focused on the central agencies contributing to appraisal.

The key steps involved in preparing a basic economic analysis of a project using a discounted cashflow spreadsheet (as in **Case Example #10** below) are:

- 1) List key assumptions made in the analysis. These will vary depending on the type of project. The assumptions will often relate to the estimation of demand for the output of the project, be it *incremental* (new demand) or *non-incremental* (diverted demand). As an example, a Roads project might need assumptions about the level of traffic on the road by type of vehicle. It might also need assumptions about how to value savings in vehicle operating costs or time saved by road users (two of the benefits often associated with investment in improvements to roads). The analysis can refine the assumptions over time. It is likely to take several iterations, involving broad consultation, to arrive at a satisfactory set of assumptions for the analysis.
- 2) In estimating costs and benefits, the basic economic analysis attempts to make a comparison between the situation *with the project* and the situation *without the project* in order to clearly define its impact. This *without project* situation is also known as the counterfactual.
- 3) The next step is to set up a cashflow table of project costs and benefits over the estimated life of the project, using formulas linked to the key assumptions.
- 4) Costs include the initial capital cost of the project, and ongoing costs during the life of the project including the cost of maintenance (both routine maintenance, undertaken continuously every year, and more substantial periodic maintenance undertaken less frequently).
- 5) Specifying benefits is perhaps the most challenging aspect of the analysis. Only benefits directly attributable to the project, which can be quantified in money terms, should be included (benefits which might spin-off from a project often require additional capital investments, which should be subject to basic economic analyses of their own). It is possible to document other benefits which cannot be readily quantified, in support of the basic economic analysis.
- 6) It is sometimes appropriate to include a residual figure for the project at the end of the project life. This could be a cost if there are costs involved in closing the project, or a benefit if the project retains a residual value at the end of the assumed project life.

Case Example # 10: Simplified Economic Analysis Spreadsheet

Tonga

This case example is presented to demonstrate the use of a simple template for discounted cashflow analysis.

A tool was developed under the NIIP technical assistance for the basic economic analysis of projects, applying a discounted cashflow model which leads to the calculation of indicators of viability (Net Present Value or NPV, and Internal Rate of Return or IRR). As set up, the tool considered project costs and benefits over an assumed project life of 20 years and included a mix of financial and economic analysis. It recognized most costs in financial terms without shadow-pricing, but also allowed for the estimation of broader economic costs to the nation as a whole. Similarly, any benefits in financial terms were taken up without shadow-pricing, and there was provision to include estimates of economic benefits for the nation as a whole.

Template for Basic Economic Analysis (Annex 4)

Figure xx: Example of Basic Economic Analysis												
How does economic analysis work?												
	- list key assumptions made in the analysis (the analysis can be refined over time by refining the assumptions)											
	- set up a cash flow table of project costs and benefits over the estimated life of the project, using formulae linked to the key assumptions											
	- the spreadsheet calculates net project benefits (total project benefits minus total project costs) for the cash flow											
	- the spreadsheet uses discounting (accounting for the time value of money) to calculate indicators such as Net Present Value (NPV) and Internal Rate of Return (IRR)											
	- specifying benefits is perhaps the most challenging aspect of the analysis (only benefits attributable to the project should be included)											
	- more advanced analysis requires prices to be adjusted to remove distortions e.g. in exchange rates and labour rates, and as a result of taxes and subsidies											
	- accessing case studies of similar projects in similar contexts is a good way to get ideas about how your project could be analysed											
	- sensitivity analysis can be undertaken by varying key assumptions and seeing the impact on the NPV and IRR results											
Key assumptions behind the economic analysis:												
(indicative examples)	Assumptions/baselines	Capital cost (T'000)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assumptions re costs												
Phasing of project construction		10,000	50%	50%								
Periodic refurbishment (% of initial cost)		10%										
O&M begins year 3 (% of capital cost)		5%										
End of life costs in final year (% of initial cost)		10%										
Other economic costs (if any)												
Assumptions re benefits												
Benefit 1 (e.g. linked to population)												
- population growth rate		1%										
- population		106,000										
- benefit per head (\$T)		\$10.00										
Benefit 2 (e.g. linked to traffic)												
- traffic growth rate		1.5%										
- annual traffic (baseline 100 vehicles per day)		36,500										
- vehicle cost saving (av. \$T per trip)		\$5.00										
Benefit 3 (e.g. linked to quality of supply)												
- households receiving improved service		1,200										
- value to household (\$T per week)		\$5.00										
Other economic benefits (if any)												
Cash Flow												
			Year 1 (T'000)	Year 2 (T'000)	Year 3 (T'000)	Year 4 (T'000)	Year 5 (T'000)	Year 6 (T'000)	Year 7 (T'000)	Year 8 (T'000)	Year 9 (T'000)	Year 10 (T'000)
Project costs												
Capital costs			5,000	5,000								
Operating and maintenance costs					500	500	500	500	500	500	500	500
End of project life costs (net)												
Total project costs			5,000	5,000	500	500	500	500	500	500	500	500
Project benefits												
Benefit 1					1,060	1,071	1,081	1,092	1,103	1,114	1,125	1,136
Benefit 2					183	185	188	191	194	197	200	203
Benefit 3					312	312	312	312	312	312	312	312
Total project benefits			0	0	1,555	1,568	1,581	1,595	1,609	1,623	1,637	1,651
Net project benefits			-5,000	-5,000	1,055	1,068	1,081	1,095	1,109	1,123	1,137	1,151
Discounted Cash Flow												
Net present value (NPV)												
@ 9% discount rate					-942							
@ 6% discount rate					1,100							
Internal rate of return (IRR)					7%							

- 7) The spreadsheet calculates net project benefits (total project benefits minus total project costs) for the cashflow. It then uses discounting (accounting for the time value of money) to calculate indicators of viability: NPV and IRR, drawing on the flow of net benefits. In this way future costs/benefits are brought back to present day values.
- 8) More advanced analysis requires prices to be adjusted to remove distortions, e.g., in exchange rates and labor rates, and as a result of taxes and subsidies.

- 9) Accessing case studies of similar projects in similar contexts is a good way to get ideas about how your project could be analyzed.
- 10) Sensitivity analysis can be undertaken by varying key assumptions and seeing the impact on the NPV and IRR results. This might involve tracing the impact of an increase in capital cost, a delay or reduction in the realization of benefits, etc.

The process of preparing and critiquing the basic economic analysis is a great way to develop a deeper understanding of the project and its contribution to national development.

Preferred Approach: Economic analysis of projects (to support business case development)

There are four useful guidelines for conducting project-level economic analysis to support a business case for budget approval.

The first is the Asian Development Bank's *Guidelines for the Economic Analysis of Projects* (ADB, 2017), which aims to improve the consistency of project economic analysis. The guidelines provide general principles for conducting project economic analysis. The appendices provide illustrations of their application. The guideline was originally produced in 1997, with the 2017 edition incorporating various updates and a new section on valuing benefits by sector. This is a comprehensive guide with advanced economic evaluation concepts. As such, it is more suited for technical professionals and would prove challenging for broader adoption across a country's infrastructure agencies. For projects seeking ADB funding, it is important that this guide is used when developing the detailed business case.

The second is the World Bank's *Economic Analysis of Investment Operations* (WBG, 2001). Although published 20 years ago, this guideline presents general principles and detailed methodologies that are applicable across sectors, including quantitative risk analysis. It provides both theory and practice about how to evaluate transportation, health, and education projects, and it explains how to assess the economic, social, and environmental impact of these projects.

The third is published by UNDP/CROP and entitled *Cost-Benefit Analysis for Natural Resource Management in the Pacific* (UNDP, 2013). As the name suggests, it is a useful guide in that it is specific to the Pacific region, although its focus is more on the protection of natural resources than on infrastructure projects.

The fourth guide to economic analysis is probably the easiest to digest by non-technical staff, is specific to infrastructure projects and promotes a rapid approach to quantifying benefits, which is of a level suitable to support business case development. It is published by Infrastructure Australia and entitled *Guide to Economic Appraisal* (Infrastructure Australia, 2021). The guide is part of a wider infrastructure assessment framework, is very user-friendly, and includes both complete and rapid cost-benefit analysis methodologies. The guide details a nine-step process for undertaking an economic analysis:

- Step 1:* Articulate the problems and opportunities being addressed
- Step 2:* Identify the base case and project case options
- Step 3:* Identify costs and benefits and how they are measured
- Step 4:* Forecast the demand and impacts over the life of the investment
- Step 5:* Monetize the costs and benefits
- Step 6:* Identify non-monetized impacts
- Step 7:* Discount costs and benefits to determine the net benefit
- Step 8:* Analyze risks and test sensitivities
- Step 9:* Report on cost-benefit analysis result



There is significant international guidance on cost-benefit analysis, and the guides mentioned above are a small subset of those that present useful best-practice methodologies for economic analysis. Adoption will be dependent on the source of project funding sought and the project management frameworks and evaluation methodologies governments already have in place to support budget applications. As a minimum, it is recommended that the level of detail promoted by Infrastructure Australia, in their rapid cost-benefit analysis approach, should be followed when developing project business cases for funding and budget approval.

Opportunities for funding infrastructure investment projects were considered in **Section III.2**. Funding could involve one or a combination of the following sources: government, SOEs, development partners (providing grants or loans on concessional terms), and domestic groups including businesses, financial institutions, and community organizations.

8.3 Sustaining the NIIP – Project Pipeline

Capacity to monitor and evaluate the implementation of NIIP projects helps identify lessons to be learned in developing the next generation of infrastructure investment proposals.

The key tool in this regard is an effective project database; one which collects the right information and makes it available to stakeholders in a timely fashion. The database serves a range of functions through the stages of preparation of the NIIP, and in facilitating a sustainable NIIP process. It tracks not only the priority projects identified in the NIIP, but also ongoing and committed projects, and other project proposals still under development. It constitutes the project pipeline. Further discussion of the database is included in **Section III.5.2** above.

It is desirable for the NIIP prioritized project list to become a process rolled over annually, timed to work in harmony with the annual budget cycle and calendar, though recognizing that projects identified in the NIIP as high priority may take some time to feed into the budget. An initial target could be to publish the current NIIP prioritized project list with the budget papers.

Submissions in relation to the annual updating of the NIIP prioritized project list could be called for on an annual basis (or received by the lead agency throughout the year as they are completed), and prioritization would be undertaken of the stock of project proposals on hand at an agreed point in time.

The stock of project proposals on hand for prioritization would include:


- 1) new project proposal submissions; and
- 2) project proposals from the previous NIIP which had not been identified as priority projects and approved for further development, subject to confirmation from the initiating agency that the project is still needed in its current form.

The space for new projects as the NIIP is rolled over each year would be equivalent to 1 year of funding potentially available (or could be tailored to the value of projects emerging from the pipeline having been funded or no longer being pursued).

In relation to the following categories of project from the previous NIIP:

- 1) projects which had been identified as priority projects and approved for further development, but which had not yet received approval for funding; and
- 2) projects which had received approval for funding after the preparation and appraisal of more detailed business cases, but which had not yet been funded.

There may be a need for a sunset clause attached to the relevant approvals, at the expiry of which they would need to be reviewed and resubmitted if still needed.



Supplementing the rolling annual process for updating the NIIP prioritized project list, could be a periodic (say 5-yearly) review of the state of infrastructure. This would include a stock-take by sector, and a review of the policy and regulatory environment for infrastructure provision, perhaps with a theme each time addressing an infrastructure issue of current interest.

8.4 Improvement Plan

Work on preparing the NIIP is likely to lead to the identification of opportunities for improving the way projects are identified, prioritized, justified, and budgeted.

The final section of the NIIP should contain a consolidated list of improvement opportunities that were identified while formulation of the plan. These opportunities will vary from case to case and could lead to recommendations for further action in areas including but not limited to governance, process, systems, or data improvements.

As a minimum the improvement plan should include:

- a) A short name for the initiative;
- b) A brief problem statement; and
- c) Recommendation or suggestion for improvement.

Unlike a more tactical “action plan”, it is not expected that the NIIP improvement plan will include resourcing, scheduling, and budgeting estimates. It is simply a summary of what the core team have identified as gaps or disconnects between the 10-year planning horizon and the approval of a project for funding. In that sense, it would not normally include recommendations on downstream design, and project delivery processes.

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