

Annex 1 – Papua New Guinea National Adaptation Plan  
Sectoral Planning Guidelines for Climate Change  
Adaptation

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# SECTORAL PLANNING GUIDELINES FOR CLIMATE CHANGE ADAPTATION

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## Acronyms

ATWC	Adaptation Technical Working Committee
ATWG	Adaptation Technical Working Group
CCA	Climate Change Adaptation
CCDA	Climate Change Development Authority
CCMA	Climate Change (Management) Act
DAL	Department of Agriculture and Livestock
DDAs	District Development Authorities
DNPM	Department of National Planning and Monitoring
DoF	Department of Finance
DoT	Department of Transport
DoW	Department of Works
DPLGA	Department of Provincial and Local Government Affairs
GCF	Green Climate Fund
MCA	Multi-criteria Analysis
MTDP	Medium Term Development Plan
NDC	Nationally Determined Contribution
NSO	National Statistical Office
NWS	National Weather Service
PCCC	Provincial Climate Change Committees
UNFCCC	United Nations Framework Convention on Climate Change

## Introduction

Papua New Guinea’s first National Adaptation Plan (NAP) 2022-2030 is designed as a strategic framework to support efforts led by Papua New Guinea’s Climate Change and Development Authority (CCDA) to address climate change impacts. The NAP defines a series of cross-cutting strategies to strengthen institutional capacities and the ability to effectively mainstream climate change adaptation (CCA) and disaster risk reduction and management in priority sectors. These include sectoral and provincial planning and instruments. It also establishes sectoral strategic actions to be implemented through sectoral CCA plans in accordance with the Climate Change Management Act 2022 (Amended).<sup>1</sup> To address the expected impacts of climate change, the Government of Papua New Guinea through the NAP process has prioritised four development sectors for the period 2021-2030: agriculture, health, transport, and infrastructure.

## Scope and Objectives of the Guidelines

These Sectoral Planning Guidelines for climate change adaptation aim to assist climate change adaptation efforts in implementing Papua New Guinea’s NAP adaptation goals and targets. This guideline can therefore be used to assist decision-making by providing guidance to identify and prioritise adaptation options for each sector that are consistent with Papua New Guinea’s Nationally Determined Contributions (NDCs) and in achieving Papua New Guinea’s NAP adaptation goals and targets. They are also aimed at building synergies across sectors and promoting a gender-responsive and inclusive approach. The Sectoral Planning Guidelines for climate change adaptation were designed based on international best practices and through an inclusive, transparent and participatory process. In particular, the guidelines constitute six key steps: 1) undertaking the groundwork ‘preparing the ground’; 2) identifying vulnerabilities to the sector being targeted; 3) defining goals and identifying adaptation options; 4) appraising adaptation options; 5) integrating the adaptation planning; 6) implementing evaluating and reviewing the adaptation actions and planning.

*Figure 1 - Steps to developing sectoral climate change adaptation plans*



<sup>1</sup> The CCMA mandates each regulated sector of the economy to develop and *implement a climate compatible adaptation action plan* on a yearly basis, and with immediate nature. Adaptation plans for each regulated sector, as defined in the amended CCMA, should be prepared in a way that relevant priority climate change vulnerabilities and risks are identified, including to: 1) adapt to climate induced natural events; and 2) identify ways to participate in: coastal early warning systems; community-based mangrove planting; coastal engineering protection; agricultural intervention; human settlement and migration; or protection of marine protected areas or marine reserves. (CCMA, 2021). These adaptation plans will take the form of strengthened climate change adaptation compatible sectoral plans or stand-alone adaptation sectoral plans, as appropriate.

## Structure of the Sectoral Planning Guidelines for Climate Change Adaptation

The six steps to mainstream climate change adaptation through sectoral plans are:

**Step 1: Prepare the ground.** Step 1 entails setting up a structured planning process that defines coordination mechanisms and clarifies roles and responsibilities, estimating human and financial resources needed, and identifying and collecting available information:

- *Step 1.1* This stage involves establishing a core team for climate change adaptation that has an explicit mandate to coordinate and steer the planning process.
- *Step 1.2* This body will then be responsible for identifying cooperation needs with other administrative bodies inside and outside the sector and other relevant stakeholders.
- *Step 1.3* This body will also be responsible for ensuring gender and equitable representation throughout these.
- *Step 1.4* Involves defining of the objectives, scope and format of the climate change adaptation sectoral plan.
- *Step 1.5* Estimates the resources needed for its development and identifies potential sources of funding.
- *Step 1.6* Maps and compiles available information. The compilation of baseline information will be essential to map and identify gender-differentiated vulnerability, needs, and capacities, and to avoid gender-blind sectoral climate change adaptation plans and actions.

**Step 2: Identify sectoral vulnerabilities.** Step 2 is aimed at providing the core team established under step 1.1, with a comprehensive overview of the current and future climate risks and climate change adaptation opportunities at the sectoral level.

- *Step 2.2* involves developing vulnerability and climate change impact assessments to provide information on current and projected sectoral impacts and consequences of climate change and extreme weather events.

**Step 3: Define climate change adaptation goals, objectives and options.** Step 3 involves:

- *Step 3.1* defines adaptation goals and objectives for the sector in alignment with the NAP and Enhanced NDC.
- *Step 3.2* Identifies a portfolio of climate change adaptation options or measures that will help achieve the sectoral goals.
- *Step 3.3* Estimates costs of priority climate change adaptation options or measures.
- *Step 3.4* Compiles information for each climate change adaptation option in an options factsheet to facilitate the comparison and prioritization of climate change adaptation options.

**Step 4: Appraise adaptation options.** Step 4 aims to guide the appraisal of adaptation options to help to identify and prioritise climate change adaptation measures to be included in the sectoral climate change adaptation plans that are also gender inclusive. The appraisal process envisaged through this step is

conducted using a set of established criteria that build on the existing appraisal tools to assess climate change project proposals. Appraisal of adaptation options involves:

- *Step 4.1* Planning and organising a participatory appraisal process.
- *Step 4.2* Prioritizing options through Multi-Criteria Analysis (MCA).
- *Step 4.3* Ranking of climate change adaptation options.
- *Step 4.4* Documenting the results of the appraisal process.

**Step 5: Development of the sectoral climate change adaptation plan.** Step 5 involves defining how, when and by whom, specific climate change adaptation measures will be implemented in order to achieve the goals and objectives of the sectoral climate change adaptation plan. This includes:

- *Step 5.1* Preparing an implementation action plan.
- *Step 5.2* Integrating the sectoral climate change adaptation plan into the chosen sectoral policy instrument.

**Step 6: Monitoring, evaluating and updating.** Regular monitoring of progress, as defined in the sectoral climate change adaptation plan (and implementation action plan), will be necessary not only to continuously track climate change adaptation actions outlined in the plan, but also to evaluate the plan's progress in meeting its goals. This step provides requires:

- *Step 6.1* A monitoring and evaluation strategy.
- *Step 6.2* Updating the sectoral climate change adaptation plan according to the results achieved.



## Step 1. Preparing the ground



The first step to develop a sectoral climate change adaptation plan involves setting up a structured planning process which defines coordination mechanisms and clarifies roles and responsibilities, estimating human and financial resources needed, and identifying and collecting available information.

Preparing the ground involves

1. Establishing a core team for climate change adaptation with an explicit mandate to coordinate and steer the planning process (Step 1.1).
2. Identifying cooperation needs with other administrative bodies inside and outside the sector and other relevant stakeholders (Steps 1.2 and 1.3).
3. Defining the objectives, scope and format of the climate change adaptation sectoral plan (Step 1.4).
4. Estimating resources needed for its development and identifying potential sources of funding (Step 1.5), and
5. Mapping and compiling available information (Step 1.6).

### 1.1 Establish a core team for sectoral climate change adaptation planning

In this step, lead sectoral entities should set up a **sectoral climate change adaptation core team** to coordinate the planning process. The climate change adaptation core team should include staff of the lead sectoral entity as well as other technical representatives/delegates from relevant entities within each sector. For example, a core team defined to support the development of the sectoral climate change adaptation plan for the agricultural sector could include members of the DAL as well as from NARI, while the development of a sectoral climate change adaptation plan for the infrastructure sector could include members from the DoW, DoT and the NWS. Members of the core team should have ample understanding and experience on climate-related issues in the sector. Specific responsibilities may include liaising with different actors within and outside the sector, formulating drafts, and overseeing the development of the sectoral climate change adaptation plan in alignment with the NAP and these guidelines.

When establishing the sectoral climate change adaptation core team, lead sectoral entities should:

- i) Determine the members of the core team.
- ii) Define the scope, objectives, and tasks of the core team.
- iii) Create a schedule and set milestones for the development of the sectoral climate change adaptation plan.
- iv) Define the process to ensure information is documented throughout the process in a transparent manner.

## 1.2 Identify cooperation needs with other government institutions within and outside the sector

In response to Papua New Guinea's adaptation priorities, vulnerabilities and priority sectors as defined in its policy framework and the national adaptation planning process (see NAP's Section 3), Papua New Guinea's NAP includes a portfolio of sectoral strategies. These strategies are geared at achieving Papua New Guinea's adaptation goals and targets. The implementation of sectoral strategies outlined in the NAP will involve cross-sectoral efforts. Leading agencies are responsible for the overall development and implementation of climate change adaptation sector-specific plans, liaising with the CCDA, DNPM, DoF, NSO, DPLGA, as well as with other relevant sectoral entities is necessary to foster synergies and avoid duplication of efforts. Sectoral climate change adaptation core teams, supported by lead sectoral entities should identify key institutions with which cooperation is required. The climate change adaptation core team should consider existing sectoral coordination platforms and whether they can support the sectoral climate change adaptation plan development, implementation, monitoring, and evaluation. In addition, it will be critical to liaise with Provincial Authorities and District Development Authorities to integrate local needs and knowledge.

## 1.3 Identify stakeholders to be involved in the sectoral climate change adaptation planning process

Including a wide range of stakeholders in the development of climate change adaptation sectoral plans is essential for the legitimacy, acceptability, and long-term effectiveness of the planning process. A diverse array of stakeholders, both state and non-state, can contribute to the process through their knowledge, skills and experience to identify and appraise adaptation options (Steps 3 and 4). Coordination and decision-making platforms at the national and subnational levels, such as via the Adaptation Technical Working Group (ATWG), Provincial Climate Change Committees (PCCCs) and Provincial Disaster Committees, provide opportunities to use available structures and arrangements to facilitate sectoral stakeholder engagement during the development of climate change adaptation sectoral plans. Sectoral particularities will need to be considered by lead sectoral entities when mapping relevant organisations, interest groups, and stakeholders to be involved, as well as when defining the engagement process. Overall, interest groups or stakeholders to be engaged in the planning process may include:

- Representatives from relevant professional groups, private sector organisations, non-governmental organisations, and academic institutions, as well as other thematic experts as needed.
- Local expertise should be sought to provide knowledge on the history of climate change impacts and implementation of climate change adaptation actions.
- Representatives of regulatory and legislative organisations.
- Local stakeholders and/or stakeholders who may be involved in the implementation of a particular adaptive response and/or who may experience the effects of the particular response, including women's associations.

Papua New Guinea's NAP aims to promote climate change adaptation through an equitable and gender-responsive process, so full and meaningful participation of women, youth and persons with disabilities should be ensured throughout the sectoral adaptation planning process. Gender representation in the core climate change adaptation team will be essential to ensure a gender-responsive climate change

adaptation planning and implementation process and so stakeholder engagement should be developed in accordance with Papua New Guinea's Gender and Social Inclusion Policy. The design of equitable and gender-responsive sectoral plans will therefore benefit from the engagement of governmental entities such as the Department of Community Development and Religion, and the Department of the Prime Minister and the National Executive Council (NEC), as the responsible entities for implementing the gender and social inclusion policy. Crucially, stakeholder engagement processes can be resource-intensive, and the sectoral climate change adaptation core team should define clear engagement roles early in the sectoral planning process, including the estimation of resources needed (see Step 1.5).

## 1.4 Define the pathway for the development of a sectoral climate change adaptation plan

Mainstreaming climate change adaptation in sectoral planning instruments can take different forms or pathways, depending on the sector-specific policy and institutional context. In Step 1.4 the sectoral climate change adaptation core team will define the most appropriate pathway to develop its sectoral adaptation plan towards contributing to the achievement of sectoral adaptation targets, consistent with the sector's policy, planning and budgeting systems and instruments. Sectoral entities have three pathways or options to develop sectoral climate change adaptation plans: 1) Mainstream climate change adaptation into an existing sectoral development plan; 2) Integrate a climate change adaptation plan in existing sectoral climate policies; or 3) Develop a stand-alone dedicated sectoral climate change adaptation plan (Box 1). Where the sectoral climate change adaptation plan will be developed through options 1 and 2, the sectoral climate change adaptation core team should identify the specific sectoral policy or plan that will be used to mainstream climate change adaptation.

### Box 1. Selecting the pathway to integrate a sectoral climate change adaptation plan

The best pathway to integrate the climate change adaptation sectoral plan will depend on the planning process and existing planning instruments for each sector. To define the best option, sectoral institutions could consider the available sectoral planning instruments, as well as the planning and budgeting cycle. Mainstreaming of climate change adaptation into sectoral plans and/or policies through pathways 1 and 2 may provide cost-efficient ways to create synergies with existing processes and allow to maximize financial and technical resources.

The chosen pathway should be discussed with the DNPM and the DoF to ensure national uptake and facilitate linkages with the budgeting process. Questions that could guide the climate change adaptation core team to identify the best pathway include:

- Are there are opportunities to update or create new sectoral development plans in the near term (e.g., in the next year) that include the priority adaptation options?
- Is the sector already working to develop or update a climate policy or plans to develop or update a climate policy for the sector in the near term?
- If developing a standalone sectoral plan, how would this plan be linked to the institutional plans and budget?

## 1.5 Estimate human and financial resources needed

Once the pathway for the development of the sectoral climate change adaptation plan has been identified, the sectoral climate change adaptation core team will have to estimate the human and financial resources needed to ensure that sufficient personnel, work time and financial resources are in place to successfully develop, implement, and monitor the sectoral climate change adaptation plan. The level of resources available for the planning process will influence the scope and limitations of the sectoral climate change adaptation plan, both during its development as well as for the implementation and monitoring.

## 1.6 Map and compile available information

Early in the process, the sectoral climate change adaptation core team should conduct a first screening of available and relevant information on climate change-related effects from a sectoral perspective. The NAP provides an overview of climate-related hazards, climate projections and sectoral impacts and vulnerabilities, as well as outlining Papua New Guinea's policy and institutional framework for the NAP. This overview identifies ongoing climate change adaptation efforts and remaining gaps, which can provide a basis to identify relevant sources of information and information needs. Information that the sectoral climate change adaptation core team should collect includes:

- Existing studies or assessments on climate change vulnerability conducted at the sectoral and/or provincial level.
- Ongoing and planned climate change adaptation projects.
- Strategies, processes, and/or measures already in place that contribute to climate change adaptation and that relate to the NAP sectoral and cross-cutting strategies.



### Preparing the ground: self-check

- A core team for climate change adaptation planning at the sectoral level is in place
- Institutional cooperation and coordination arrangements are identified and/or established
- Stakeholders to be engaged in the planning process are identified
- Human and financial resources are secured
- Overview on climate-related risks and relevant adaptation initiatives and efforts incorporated

Source: Adapted from Adaptation Support Tool (ClimateAdapt, 2021).

Ensuring a gender-responsive climate change adaptation planning, budgeting and implementation process will require the identification of sector-specific baseline information on gender-differentiated vulnerabilities, needs, and capacities, including through the development of sectoral gender gap

assessments. A gender-responsive approach to develop, monitor, and evaluate sectoral climate change adaptation plans can provide an opportunity to effectively promote or foster gender equality in:

- i) the recognition of gender differences in adaptation needs and capacities;
- ii) gender-equitable participation and influence in adaptation decision-making processes, and;
- iii) gender-equitable access to financial resources and other benefits resulting from investments in adaptation.

Box 2 outlines key steps to consider when conducting a gender-responsive climate change adaptation sectoral planning process in a way that maximises opportunities to mainstream a gender-responsive approach in the NAP.

**Box 2: Key steps to maximising opportunities to integrate gender considerations in sectoral climate change adaptation planning**

- Identify opportunities to strengthen gender integration by aligning sectoral climate change adaptation with international commitments and domestic laws and policies on gender equality towards mutually supportive outcomes.
- Foster high-level political commitment for a gender-responsive sectoral climate change adaptation planning process. Consider engaging senior management and leadership in sectoral core teams on gender and adaptation issues.
- Reflect on gender-related biases as well as those that exist within and among institutions as part of gender gap assessments and consider how they may inhibit progress in addressing gender considerations in the NAP process (for example, in the design and facilitation of meetings).
- Agree on a gender code of conduct at the sectoral and provincial levels, considering issues on representation and respectful communication. Identify gender equality advocates and engage them as allies, involving them in the NAP process and providing opportunities for them to share their perspectives.
- Build on existing gender governance and policy structures and instruments; use existing sex-disaggregated data and gender analyses; and take advantage of relevant coordination mechanisms.
- Raise awareness of the need to address gender in the NAP process and foster opportunities for knowledge sharing and capacity building in gender and adaptation.
- Consider the integration of gender considerations in terms of reference for consultants (for example, for risk and vulnerability assessments, development of communication strategies or proposal development).
- Identify gender expertise and engage them in the sectoral core team.
- Seek out resources of technical and financial support for integrating gender in the NAP process to ensure that the necessary resources are in place.

Source: Adapted from NAP Global Network & UNFCCC (2019).

## Step 2. Identify sectoral vulnerabilities and expected climate impacts



This step aims to provide the sectoral climate change adaptation core team with a comprehensive overview of the current and future climate risks and climate change adaptation opportunities at the sectoral level. These will provide the basis for the development of the climate change adaptation sectoral plan. This step should provide a clear understanding of:

- i) the sectoral impacts and consequences of extreme weather events and periods of climate variability; and
- ii) the potential future sectoral impacts and consequences of projected climate change.

Designing climate change adaptation sectoral plans requires decision-makers from each sector to carefully assess the sector-specific vulnerabilities to climate change, in order to plan for sector specific climate change impacts and identify adaptation measures that address these climate-related sectoral risks. Climate change impact and vulnerability assessments aim to summarise the most relevant climate risks and vulnerabilities at the sectoral level and are usually built upon:

- Information on current climate conditions and scenarios of future climate, including future slow on-set and extremes events.
- Information of how periods of climate variability and change have impacted the sector in the past.
- An assessment of potential impacts of climate extremes and climate change on potentially vulnerable sectors, often performed in a participatory manner with key stakeholders and experts.
- An analysis of underlying factors and trends (ecosystem-related, physical, technical, or socio-economic factors) that are influencing climate risks at the sectoral level.

Papua New Guinea has undertaken fundamental efforts to date, in developing vulnerability assessments at the provincial level, and these should be instrumental when preparing and conducting sectoral vulnerability assessments. For example, between 2018–2020, CCDA, the Australia Department of Foreign Affairs and Trade (DFAT) and the Global Green Growth Institute (GGGI) through the Climate-Resilient Green Growth (CRGG) project conducted a sector vulnerability and adaptation (V&A) assessment for Milne Bay, New Ireland, and Enga Provinces.

**Box 3. Guiding questions for vulnerability assessments at the sectoral level.**

- What are the individual and combined effects of changes in the climate variables for the sector in the short, medium and long term? (e.g., changes on production methods, productivity and yields, assets, infrastructure)
- Which regions and groups are more exposed to these climate change effects? (e.g., key productive regions, rural vs. urban settings, identifying whether certain social groups are likely to be affected more than others)
- How are men and women differently affected by climate change in the sector?
- How are sectoral goals affected by climate change? (e.g., can sectoral development targets be achieved in the context of expected climate impacts)
- What is the magnitude of potential future sectoral Impacts?

Source: Adapted from Adaptation Support Tool (ClimateAdapt, 2021) and technical guidelines for the national adaptation plan process (LEG, 2012)

The guiding questions outlined in Box 3 aim to inform climate impact and vulnerability assessments.

## Step 3. Define climate change adaptation goals, objectives, and options



A detailed plan of action, setting out how, when and by whom specific adaptation measures should be implemented is crucial to achieve adaptation on the ground. To develop this plan of action it is important to identify potential adaptation options and collect relevant information for these options in a portfolio, including their likely costs and benefits which will facilitate further prioritisation of the options (step 4).

Upon completion of Step 2, the sectoral climate change adaptation core team should have sufficient information to inform the identification of adaptation goals, objectives, and measures for the sector.

### 3.1 Define adaptation goals and objectives for the sector

Sectoral goals for climate change adaptation should be aligned with development objectives in the sector, the adaptation targets established in the Enhanced NDC (2020), as well as to the goals of sectoral climate change adaptation areas established in the NAP (see sections 5.4 Climate change adaptation priorities for the 2022-2030 period, and 5.5 Cross-cutting climate change adaptation strategies in the NAP).

### 3.2 Define climate change adaptation measures

Once the climate change adaptation goals and objectives for the sector have been identified, the sectoral climate change adaptation core team in collaboration with relevant stakeholders should identify a portfolio of climate change adaptation options or measures that will help achieve the sectoral goals (Box 4).

#### Box 4. Types of adaptation options

Adaptation options refer to the available and appropriate strategies and/or measures to adapt to climate-induced hazards. Adaptation options or measures may involve:

- Eliminating barriers or constraints to adaptation (e.g., by adjusting regulation and legislation, developing guidance, pre-feasibility and feasibility studies, etc.).
- Implementation of actions that help reduce vulnerability to climate risks or exploit opportunities (e.g., developing/adjusting infrastructure to help people adapt to the adverse effects of climate change, ecosystem-based adaptation, changes in agricultural or land management practices, etc.).
- Some options may involve adjusting current development activities, while others may be new, or require major transformations in operations.

Papua New Guinea has identified various adaptation options through key national instruments including the enhanced NDC, National Communications to the United Nations Framework Convention on Climate Change (UNFCCC), the Country Programme under the Green Climate Fund (GCF) and most recently through Papua New Guinea's first NAP. The NAP sectoral strategies serve as a basis to inform the identification and selection of climate change adaptation options that fit within the specific context and the defined adaptation goals for the sector. The climate change adaptation core group should also



consider the NAP's cross-cutting strategies as cross-cutting measures geared at awareness-raising, capacity building, and designing gender-responsive climate change adaptation options.

### 3.3 Estimate the cost of the adaptation options

This step aims to facilitate the estimation of costs for priority adaptation options. The methodology draws on Papua New Guinea's existing costing and budgeting approaches including with its development partners, and so no adaptation-specific costing methodology is envisioned. This aims to strengthen existing processes, avoid duplication, and reduces resource demands in terms of funding and capacity. Estimates should be developed through a stepwise approach as part of the project or activity design process to avoid the inefficient use of resources on costing, starting with the idea stage when identifying climate change adaptation measures. Costs may then be refined as progress is made on resource mobilization (Box 5). Only direct costs of a measure, e.g., for the investment and operations of a project or the development and implementation of policies and regulations, are being considered (if financing source-specific requirements do not stipulate otherwise). Table 1 provides a summary of the costing approaches by intervention stage and possible sources of information.

#### Box 5. Costing of adaptation options in sectoral climate change adaptation plans

The costing process generally follows the following intervention stages:

- **Idea stage:** At this stage, generally only a broad idea for an adaptation intervention exists. Potential financing sources may have been identified but no further discussions have taken place yet and no formal or informal financing commitment has been obtained. To develop the idea and initiate fundraising efforts, the Climate Change Adaptation Options Factsheet (see 3.4 below) can be used. The factsheet includes initial ballpark estimates covering investment and recurrent operations and maintenance costs, which provide a high-level orientation on the likely cost of an adaptation option. Investment costs are usually one-off costs at the beginning of an intervention, e.g., for the purchase or construction of buildings, equipment, and machinery, and/or technical expertise to design and implement a project or policy measure. Recurrent costs are ongoing and necessary to finance the operation of an intervention and can comprise, e.g., wages and salaries, utilities, consumables, and maintenance. Developing ballpark cost estimates of measures is a common practice in PNG and can be found, e.g., in the MDTP III, the Enhanced NDC, and the GCF Country Programme. While a single estimate each for capital and recurrent costs often suffices at this stage, a high-level breakdown by main activities, inputs, or cost categories can make a cost estimate more dependable as well as support technical discussions and resource mobilization engagement while generally not requiring a substantial investment.

### Box 5. Costing of adaptation options in sectoral climate change adaptation plans (cont.)

An example of a slightly more detailed ballpark cost estimate is included in selected project proposals of Saint Lucia’s sectoral strategies and action plans under its NAP:

#### Examples of ballpark cost estimates from Saint Lucia’s NAP documentation

Intervention idea	High-level cost estimates (US\$)	
Enhancement of Saint Lucia’s early warning systems and flood emergency response through flood hotspot analysis, guidelines, training plan, procurement and installation of flood level gauges	Consultancy fees (Flood hotspot analysis, guidelines, training plan)	200,000
	Procurement of flood gauges	10,000
	Installation of gauges	2,000
	Training of community members	3,000
	<b>Total</b>	<b>215,000</b>
Improving energy efficiency within the water sector in Saint Lucia through the introduction of renewable energy technologies into the operations of the Water and Sewerage Company Inc.	Consultancy on design of renewable energy solutions and training of staff	100,000
	Procurement and commissioning of renewable energy solutions	500,000
	<b>Total</b>	<b>600,000</b>

- Concept stage:** Once interest in a financing source has been established formally or informally, the initial ballpark estimates can be developed into high-level cost estimates, in close consultation with the focal point of the identified financing source to reflect requirements and preferences in the intervention design. This can be done, for example, by breaking down the initial ballpark cost estimate by main activity and/or cost category, using a simple table, such as the one included in Annex 2, or the financing instrument-specific template. The Government of Papua New Guinea provides direction in the form of guidelines for its two large capital investment programs, the Public Investment Program (PIP) and the Service Improvement Program (SIP), as well as through the annual budget preparation process. For example, the SIP Administrative Guidelines include a breakdown into the major cost categories ‘manpower’, ‘equipment’, ‘materials’, and ‘capital works’ as part of the Project Formulation Document template. Development partners also generally prescribe a concept note template, which contains cost or budget information in a specific format.
- Detailed design stage:** Upon approval or endorsement of the concept note (or similar document), the detailed cost estimates can be developed, again following the prescribed requirements and templates of the secured financing source(s). In the case of development partner financing, staff will often lead the compilation of cost estimates and also prepare an economic cost-benefit and/or financial analysis if required.

Table 1 - Overview of climate change adaptation costing approaches by intervention stage

Stage	Documentation	Costing approach	Sources of information (examples)
Idea	Climate change adaptation option Factsheet, <i>Project Identification Document for Government of Papua New Guinea projects</i>	Ballpark cost estimate	Existing plan, expert knowledge, experience from similar interventions in Papua New Guinea or elsewhere
Concept	Concept note using prescribed templates and guidance from specific financing source, <i>Project Formulation Document for Government of Papua New Guinea projects</i>	High-level cost estimates by main activity and/or cost category	Quantities and unit costs of main inputs, expert knowledge, experience from similar interventions in Papua New Guinea or elsewhere
Detailed design	Project document package using prescribed templates and guidance from specific financing source	Detailed cost estimates: cost-benefit and/or financial analysis as required	Quantities and unit costs of inputs, feasibility studies, impact evaluations, cost-benefit analysis from similar interventions

*Annex 1 Costing adaptation measures* provides a more detailed overview of how to cost adaptation measures and additional guidance materials and templates.

### 3.4 Compile and summarise information for each climate change adaptation option

The climate change adaptation sectoral core team should compile information for each adaptation option to improve understanding of each option and facilitate the comparison and prioritization of adaptation options. Information for each one of the climate change adaptation options identified should be summarized in climate change adaptation options factsheets. A templated tool to compile and summarise information for each option in a homogenous way is included in Annex 2. This templated tool will assist in subsequent steps to facilitate the prioritisation exercise.

Table 2 Overview of the templated tool to prepare climate change adaptation option factsheets

Climate Change Adaptation Option Factsheet					
<b>Adaptation option</b>	Include the name of the adaptation option		<b>Number</b>	Assign a number to the adaptation option for quick identification	
<b>Sector</b>		<b>Responsible institution</b>	Institution responsible for implementation		
<b>Climate risks addressed</b>	Describe which climate change impact(s) does the option address				
<b>Intervention area and target beneficiaries</b>	Geographical location that the option will target, size and type of beneficiaries				
<b>Expected adaptation impacts in the sector</b>	Describe how the option aims to contribute to increase adaptive capacity and/or reduce vulnerability in the sector				
<b>Activities/actions included</b>	Summarize the main actions included in the adaptation option				
<b>Link to PNG's adaptation priority areas</b>	Select the key priority adaptation areas that the option aims to address. For more information see <a href="#">Papua New Guinea's Enhanced NDC 2020</a> .		1. Coastal flooding and sea level rise		
			2. Inland flooding		
			3. Food insecurity		
			4. Cities and climate change		
			5. Climate-induced migration		
			6. Damage to coral reefs		
			7. Malaria and vector-borne diseases		
			8. Water and sanitation		
			9. Landslides		
<b>Alignment with national development priorities</b>	Specify the national and sectoral policies to which the option will contribute (for more information see Annexes 1 and 2 of <a href="#">Papua New Guinea's GCF country programme</a> )				
<b>Expected climate, social, economic and environmental benefits</b>	Briefly explain the social and environmental benefits that are expected to be generated by the adaptation option				
<b>Potential environmental and social risks</b>	Describe the potential risks of the adaptation options and if measures have been identified to mitigate these risks.				
<b>Time frame for implementation</b>	Short term (five years)		Medium term (10 years)		Long term (More than 10 years)
<b>Synergies with other initiatives</b>	Describe existing or past initiatives that the adaptation option can build on or scale up				
<b>Success and limiting factors</b>	Opportunities or constraints for successful implementation of the option based on institutional experience or implementation of similar initiatives				
<b>Estimated cost</b>	Include initial ballpark estimates covering investment and recurrent costs including: (Indicative) upfront cost of the technologies/investment and its implementation, and (annual (recurrent) operational and maintenance cost.				
<b>Potential financing sources</b>	Include potential sources of financing (including national and international sources of finance as well as from the private sector).				

## Step 4. Appraise adaptation options



The appraisal process starts when a set of adaptation options have been identified considering the country's particular vulnerabilities, expected climate change impacts and key risks posed by climate change for each sector.

The appraisal of adaptation options can support decision makers in sectoral lead entities to prioritize adaptation options that offer the highest potential to increase climate resilience in relation to sectoral vulnerabilities and expected climate impacts while contributing to achieving sustainable development goals, including improved livelihoods, reduced poverty, increased equality, and sustainability. Prioritising adaptation options also allow for a precautionary approach to be taken to manage uncertainty, avoid maladaptation, and adopt a flexible approach to implementing adaptation in a phased manner.

### Box 6. Why is it important to prioritize adaptation options?

- The appraisal process helps to take into account which climate impacts are likely to be most severe and where (region, sector).
- To identify those options that are most feasible to implement – not all adaptation options can be implemented due to constraints such as insufficient local resources, capacities, information, or financing.
- To allow effective use of limited resources (financial, capacity, time)
- To promote adaptation options that fit with national development, sustainability, and climate change goals.

Papua New Guinea's sectoral planning guidelines provide a country-driven appraisal process to identify and prioritise adaptation options, consistent with current approaches to appraise climate change projects and programmes in the country, namely the [NDA No Objection Procedure Guidelines](#)<sup>2</sup> and the [Multi-Criteria Analysis \(MCA\) Tool](#).<sup>3</sup> The appraisal of adaptation options can be conducted through sub-steps to assess, prioritise, and document high-priority sectoral adaptation options, by applying a scoring tool including criteria, scoring and ranking approaches for appraising climate change projects or programmes.

The scoring tool (Step 4.2) was designed as part of the national adaptation planning process.

The appraisal of adaptation options is conducted using a set of criteria, resulting from the participatory national adaptation planning process in Papua New Guinea. The appraisal criteria draw on international guidance and best practice for the prioritisation of adaptation options, criteria from existing appraisal tools in Papua New Guinea, and reflects on the views provided by a wide range of stakeholders at the

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<sup>2</sup> The NDA No Objection Procedure Guidelines provide Accredited Entities, potential project proponents and other stakeholders the information on the process through which the NDA will issue a No Objection Letter (NOL). In this process, the CCDA as the NDA applies the MCA tool to select proposals that are aligned with national priorities and the GCF investment criteria.

<sup>3</sup> This tool was developed by the CCDA alongside the DNPM, DOF, and DPLGA with technical assistance of the USAID Climate Ready Project, to facilitate more effective and efficient review, screening and ranking of concept notes and proposals for GCF funding. The tool offers a simple approach to scoring and ranking/prioritizing GCF proposals.

national and regional level.<sup>4</sup> Appraisal criteria are included in the scoring matrix (Step 4.2). A detailed description is provided in Annex 3.

#### Box 7. Summary of key considerations for the appraisal of adaptation options

- The appraisal of climate change adaptation options should help to identify and prioritize those measures that can create social, economic, and environmental co-benefits, as well as synergies with climate change mitigation.
- The appraisal of adaptation options is conducted using a set of criteria that has been defined.
- PNG has established appraisal tools to assess GCF proposals that provide an important foundation for the appraisal of climate change adaptation options.
- The assessment and prioritization of climate change adaptation options should be conducted through participatory processes.

### 4.1 Plan and organise the appraisal process involving key stakeholders

The appraisal process is envisioned as a participatory process engaging a diversity of sectoral entities, interest groups and stakeholders, identified in Step 1. The climate change adaptation core team should plan a workshop or meeting for the appraisal process. To ensure effective and meaningful participation of all stakeholders, the climate change adaptation core team should share in advance the adaptation options factsheets developed under Step 3 with the workshop/meeting participants to allow them to become familiar with the proposed adaptation options.

### 4.2 Appraisal of adaptation options through a multi-criteria analysis

Multi-criteria analysis (MCA) should be used to appraise climate change adaptation by ranking and selecting the preferred options in a participatory manner. An appraisal tool has been developed to facilitate the prioritisation exercise, included in Annex 4 in Excel format. This, in summary, follows the process of:

- a) **Assign a score.** For each one of the sub-criteria listed in the table below, proposed adaptation options receive 1 (low) to 5 (high) points.
- b) **Multiply the score of each criterion by its weighting.** A weighting of 0.1 to 1.0 is allocated for each criterion (0.1 being less important and 1.0 being highly important).
- c) **Sum up all the values** in the Total column together to assign the total evaluation score for each sub-criteria, which will be in turn summed up at the bottom of the table to obtain the total prioritization scoring for each adaptation option.

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<sup>4</sup> National Workshop developed from the 10<sup>th</sup> to 11<sup>th</sup> of June 2021, and four regional workshops: Southern Region, 23<sup>rd</sup>-24<sup>th</sup> June; New Guinea Islands Region, 14<sup>th</sup> -15<sup>th</sup> July; Momase Region, 21<sup>st</sup>-22<sup>nd</sup> July; Highlands Region, 4<sup>th</sup>-5<sup>th</sup> August 2021.

- d) **Ensure there is consensus on the final score.** As the appraisal of adaptation options is envisioned as a participatory process including relevant stakeholders, it is important to facilitate discussions as relevant to ensure stakeholders reach a consensus on the final score.

An overview of the appraisal tool is included here in Table 3.

*Table 3 - Overview of the climate change adaptation Appraisal Tool (Annex 4).*

Criteria	Sub-criteria	Description of sub-criteria and scoring	Score	Weight	Total
A. Enhance adaptation and increase resilience to expected climate risks	A.1.1 High impact potential (size of the beneficiary group)	The option can benefit a high number of persons or groups that are vulnerable to climate change impacts (e.g., number of vulnerable famers positively impacted by the option/measure) <b>5 points</b> - High impact potential: the option targets a significant size of population relative to the total population in the intervention area. <b>3 points</b> - Medium impact potential <b>1 point</b> - Low impact potential		1.0	
	A.1.2 High impact potential (sectoral impact)	The option can reduce vulnerability and increase adaptive capacity the sector (see potential indicators in table 5) <b>5 points</b> - High impact potential <b>3 points</b> - Medium impact potential <b>1 point</b> - Low impact potential		1.0	
	A.2 Type of beneficiaries targeted	Beneficiary group is relevant and different types of vulnerable population can benefit from the option (youth, women, smallholders) <b>5 points</b> - High relevance: vulnerable populations targeted involving several types of beneficiaries <b>3 points</b> - Medium relevance: vulnerable population targeted but does not benefit different types of groups/stakeholders. <b>1 point</b> - Low relevance: the option does not target vulnerable population and does not benefit different types of groups/stakeholders.		1.0	
	A.3 Consistency with national adaptation goals	The adaptation option contributes to PNG's adaptation priority areas <b>5 points</b> - the option addresses two or more adaptation priority areas <b>3 points</b> - the option addresses one adaptation priority area <b>1 point</b> - the option does not address any adaptation priority areas		1.0	

Criteria	Sub-criteria	Description of sub-criteria and scoring	Score	Weight	Total
B. Impact on development, climate, environmental, social and economic objectives	B.1 National and sectoral policy and strategy alignment	<p>Degree of alignment with the national and sectoral policies and strategies:</p> <p><b>5 points-</b> High degree of alignment: strong alignment to MTDP III, Vision 2050, etc.</p> <p><b>3 points-</b> Medium degree of alignment</p> <p><b>1 point-</b> Low degree of alignment or no alignment</p>		1.0	
	B.2 Environmental, economic, social and climate co-benefits	<p>Potential to generate environmental, economic, social and climate mitigation co-benefits</p> <p><b>5 points-</b> High potential: the option can generate significant co-benefits across different dimensions (environmental, social, economic and climate change mitigation)</p> <p><b>3 points-</b> Medium potential: the option can generate significant co-benefits but is limited to certain dimensions (e.g., environmental and social but not climate change mitigation or economic).</p> <p><b>1 point-</b> low potential: the option generates limited co-benefits</p>		0.8	
	B.3 Potential environmental and social risks	<p>Degree of environmental and climate change risk</p> <p><b>5 points-</b> Low risk: The adaptation option has the potential to produce benefits in the long-term under different climate change scenarios, low environmental and social risks.</p> <p><b>1 point-</b> High risk: The adaptation option may only work in the short term (e.g. danger of solving a problem only to create a new one with unintended consequences), high environmental and social risks.</p>		1.0	
C. Feasible to implement, monitor and evaluate	C.1 Implementation in the short-term	<p>The option can be implemented in the short-term as first steps of a long-term adaptation strategy</p> <p><b>5 points-</b> the option can be implemented in the short-term</p> <p><b>3 points-</b> the option can be implemented in the medium term</p> <p><b>1 point-</b> the option can be implemented in the long term</p>		1.0	
	C.2. National and Sectoral	The option can be implemented complying with existing national and		0.8	



Criteria	Sub-criteria	Description of sub-criteria and scoring	Score	Weight	Total
	regulatory compliance	sectoral regulatory standards and Codes of Practice. <b>5 points</b> - the option can be implemented complying with the existing national and sectoral regulatory framework <b>1 point</b> - implementing the option would not comply with the existing regulatory framework or require the creation of new laws or regulation.			
	C.3 Institutional capacity	Degree of institutional capacity <b>5 points</b> - High capacity: There is a clear understanding of the sectoral institution that would implement the measure and said institution has the necessary managerial and operational capacity for implementing the option, as well as a monitoring and evaluation system/framework that will allow monitoring and evaluation of the results. <b>3 points</b> - Medium capacity <b>1 point</b> - Low capacity		1.0	
	C.4 Synergies with other initiatives	<b>Potential to create synergies with other initiatives:</b> <b>5 points</b> - High potential – the option can build upon existing programs to create synergies. <b>3 points</b> - Medium potential – there are no existing programs that the option could build on, but the option can scale up past projects or proven solutions. <b>1 point</b> - Low potential – the option cannot be implemented building on existing programs or scale up past initiatives.		0.6	
	C.5 Social and cultural acceptability	Degree in which the option is accepted by the target group: <b>5 points</b> - High acceptance, e.g. well adopted and/or supported by the local/traditional community <b>3 points</b> - Medium acceptance <b>1 point</b> - Low acceptance		1.0	
<b>Total evaluation score</b>					

Gender-specific sub-criteria should also be identified and integrated into the appraisal process, consistent with the gender-specific vulnerabilities, needs and capacities identified earlier in the process.

### 4.3 Rank adaptation options by the level of priority

Following the appraisal of adaptation options, options will need to be ranked according to their priority. This process should be undertaken by:

1. Sort adaptation options according to rank (e.g. high evaluation score/high priority down to lowest evaluation score/low priority).
2. Review adaptation options to identify if there are options that can be combined for more efficient and effective implementation.
3. According to the rank assign a priority to each adaptation option (high, medium, low).
4. Systematize information for the adaptation options following the template provided in Table 4 below.

Table 4 - Illustrative systematization of prioritized climate change adaptation options

<b>Climate change adaptation option</b>	<b>Total score</b>	<b>Rank (example)</b>	<b>Priority (example)</b>
Adaptation option 1		2	Medium
Adaptation option 2		3	Low
Adaptation option 3		1	High
.....		...	
Adaptation option N		N	

### 4.4 Document the results of the appraisal process

After the appraisal of adaptation options, the sectoral climate change adaptation core team should document the process and highlight those adaptation options identified as high priority options, as these will provide the basis for the preparation of the sectoral climate change adaptation plan (Step 5). For the purposes of transparency and accountability of the process, at least the following two files should be kept as a record:

- Complete climate change adaptation options factsheets (Annex 2).
- Complete climate change adaptation Appraisal Tool (Annex 4) – including scores for the first and second ranking exercise and final results.



### Appraising and selecting adaptation options self-check

- The assessment and prioritisation of adaptation options is planned to include key stakeholders
- All necessary information on climate change adaptation options is gathered to enable assessment
- The results of the assessment are integrated in a comprehensive and concise manner through option factsheets to aid the prioritisation exercise.
- Adaptation options are scored and ranked using the climate change adaptation appraisal tool.
- Preferred adaptation options are selected for implementation.
- The appraisal process and its results are documented.

Source: Adapted from Adaptation Support Tool (ClimateAdapt, 2021)

## Step 5. Development of the sectoral climate change adaptation plan



This step involves defining how, when and by whom specific adaptation measures will be implemented to achieve the goals and objectives of the sector specific CCA plan.

### 5.1 Prepare a sectoral climate change adaptation implementation action plan

Once high-priority options have been identified (Step 4), the sectoral climate change adaptation core team will define implementation strategies and arrangements for priority options. The resulting sectoral climate change adaptation implementation action plan will set out specific actions required to translate the prioritised adaptation options into action, by specifying roles, responsibilities, and timelines, and considering resource needs and resource allocation. The climate change adaptation implementation action plan will provide a detailed sectoral roadmap to put priority climate change adaptation options into practice and guide the implementation of the sectoral climate change adaptation plan. The climate change adaptation implementation action plan builds on the outcomes of Steps 1-4 and should be prepared in collaboration with the other national government institutions identified in Step 1.2, striving to create synergies and ensure coherent and efficient policy integration and implementation.

When preparing the climate change adaptation implementation action plan, the sectoral climate change adaptation core team should include:

- Climate change adaptation goals for the sector.
- Objectives and strategic directions.
- Portfolio of prioritized/appraised adaptation measures including a description of each option through the options factsheets.
- Roles and responsibilities of implementing actors, and coordination mechanisms for implementation.
- Timeline for implementation.
- Estimation of resources needed and available options for funding and financing.
- Indicators and processes to monitor and evaluate the implementation of the prioritised adaptation options.

Monitoring and tracking the progress of implementation of the adaptation options is critical to assess the effectiveness of the adaptation efforts, but also to inform the revision of the national and sectoral climate change adaptation plans. When developing the implementation action plan, sectoral climate change adaptation core teams should consider including indicators and metrics to enable monitoring of progress and outcomes from prioritised adaptation options, as well as to track progress against timelines and goals consistent with Papua New Guinea's NDC and NAP (see Step 6.1).

## 5.2 Integrate the implementation action plan into the chosen sectoral policy instrument

Once the sectoral climate change adaptation core team has completed the preparation of the sectoral climate change adaptation implementation action plan, this should be integrated in the selected policy instrument identified in the pathway defined in Step 1.4. In the case of pathways 1 and 2, prioritising adaptation options should be integrated alongside other sectoral strategies and measures, and the implementation action plan should be integrated as an annex to existing policy and plans. In the case of Pathway 3, the sectoral climate change adaptation implementation action plan will constitute the standalone sectoral climate change adaptation plan.

## Step 6. Monitoring, evaluation and update

The final step of these guidelines provides direction in relation to monitoring and evaluating the implementation of the sectoral climate change adaptation plan, as well as updating the plan based on the assessment of the progress achieved.

### 6.1 Develop a monitoring and evaluation strategy

Regular monitoring of progress, as per defined in the sectoral climate change adaptation plan (and implementation action plan) will be necessary not only to continuously track climate change adaptation actions outlined in the plan but also to evaluate the plan's progress in meeting its goals. To do so, when developing the implementation action plan, the sectoral climate change adaptation core team should consider a monitoring and evaluation strategy that includes:

- Indicators to track progress.
- Roles and responsibilities for monitoring and evaluating.
- The frequency with which the sectoral climate change adaptation core team will meet to review progress.
- The frequency with which the sectoral climate change adaptation core team, through the sectoral leading entity, will communicate progress to CCDA to facilitate monitoring and reporting of the NAP Implementation Roadmap, as well as inform the M&E system for climate change adaptation.

An initial framework is included in the NAP's Implementation Framework – Monitoring and Evaluation section. It is worth noting that the NAP requires the development of a climate change adaptation monitoring and evaluation (M&E) system and so initial indicators will need to be revised accordingly.

As defined in the NAP, sectoral climate change adaptation options and measures prioritised in sectoral climate change adaptation plans should be integrated into a national database geared at facilitating fundraising and resource mobilization, implementation, monitoring, and reporting (see the CCDA website to update information). CCDA's website will include ongoing updates of information in a web-based database of climate change adaptation efforts. Each entity working on adaptation will be responsible for providing updates on an annual basis to the CCDA website in relation to adaptation measures and their progress, resource mobilisation, and implementation.

## 6.2 Review and Update the Plan

The sectoral climate change adaptation plan constitutes a living document and therefore should be revised and updated on a regular basis to ensure it remains relevant and up to date with evolving science, national circumstances and changing climate impacts. As a result of the monitoring and evaluation process (Step 6.1), this step aims to ensure regular reviews of sectoral climate change adaptation plans to improve the effectiveness and efficiency of the process, facilitate the incorporation of new assessments and emerging science as well as capture lessons learned.

While monitoring and evaluation of climate change adaptation activities will be conducted on a regular basis, an overall update of the plan should be scheduled every five (5) years in alignment with Papua New Guinea's Enhanced NDC and sectoral planning process. The review should be guided by the metrics and indicators of success defined in step 6.1, and should ensure adequate stakeholder participation, as appropriate.

## Annexes

### Annex 1. Costing adaptation measures

Table A1.1 illustrates how a cost breakdown could look at the concept stage, or for small interventions at the detailed design stage. Table A1.1 could be used to cost each main activity when more detailed cost estimates are required.

**Table A1.1.** Basic summary table with cost estimate breakdown.

Cost category (select/add applicable ones)	Cost					Type of funding	
	Year 1	Year 2	Year 3	...	Total	Cash	In-kind
<b>Development costs (up-front)</b>	...	...	...	...	...	...	...
Personnel	...	...	...	...	...	...	...
Consultants	...	...	...	...	...	...	...
Travel	...	...	...	...	...	...	...
Training/workshop	...	...	...	...	...	...	...
Professional services	...	...	...	...	...	...	...
Materials, goods & supplies	...	...	...	...	...	...	...
Equipment	...	...	...	...	...	...	...
Capital works	...	...	...	...	...	...	...
Other	...	...	...	...	...	...	...
<b>Recurrent costs (annual)</b>	...	...	...	...	...	...	...
Personnel	...	...	...	...	...	...	...
Goods and services	...	...	...	...	...	...	...
Utilities and rentals	...	...	...	...	...	...	...
Maintenance	...	...	...	...	...	...	...
Other	...	...	...	...	...	...	...

Table A1.2 aims to facilitate bottom-up costing of an activity, whereby the required quantity of an input is multiplied by the unit cost to arrive at the annual and aggregate total cost. In the case of a training, inputs could entail, e.g., rental of a training venue, travel and per diem for participants, and hiring of trainers.

**Table A1.2.** Basic table for the bottom-up costing of activities.

Activity (e.g., training)	Unit cost	Quantity (units, days, months, participants, etc.)					Total	Total
		Year 1	Year 2	Year 3	...	Total		
...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	
<b>Sub total</b>	...	...	...	...	...	...	...	

Table A1.3 provides a list of cost categories with examples for an infrastructure project, to inform completion of Tables A1.1 and A1.2. Selected cost categories, such as research and development, consulting services, and training, also apply for policy or similar initiatives.

**Table A1.3.** Example of cost categories for an infrastructure project.

Category	Description (examples)
Civil works	<ul style="list-style-type: none"> <li>· Earth moving, excavation, cut and fill, grouting etc.</li> <li>· Concrete work including rebar and formwork (e.g., foundations, building components, tanks, and bridge components)</li> <li>· Metal fabrication (building framework, tanks, and other metal structures, etc.)</li> <li>· Building construction on roads, embankments, pipelines, etc.</li> <li>· Landscaping, planting, fences, etc.</li> </ul>

Category	Description (examples)
	<ul style="list-style-type: none"> <li>Plumbing, electrical wiring, and other utility services</li> <li>Other construction services</li> <li>Cost of special purpose construction equipment (e.g., earthmovers, cranes, arc welding equipment, and site dewatering pumps) if not already included in construction contracts</li> </ul>
Materials	<ul style="list-style-type: none"> <li>Major purchases of materials that are procured separately from associated construction services (e.g., aggregate, rock, steel, cement, sand, wood, rebar, pipes, asphalt, seedling trees, grass seeds, and paving blocks)</li> </ul>
Equipment, vehicles, furniture	<ul style="list-style-type: none"> <li>General-purpose vehicles (cars and trucks, etc.)</li> <li>General-purpose tools (e.g., landscape and building maintenance equipment)</li> <li>Office furniture and equipment (desks, cabinets, computers, copiers, and phones, etc.)</li> </ul>
Capital goods	<ul style="list-style-type: none"> <li>Electrical equipment (e.g., motors, pumps, controllers, electrical panels, telecommunication antennae)</li> <li>Mechanical equipment (e.g., overhead cranes, water and wastewater treatment process equipment, meters and other measuring devices, gates, refrigeration, heating and air conditioning)</li> <li>Special-purpose vehicles for project operations (e.g., bulldozers and compacters used in a landfill operation, and warehouse vehicles)</li> <li>Other larger machinery and equipment manufactured off-site</li> </ul>
Research and development	<ul style="list-style-type: none"> <li>Scientific investigations (e.g., water quality modeling, bench test of a treatment process, archaeological investigation, and survey of flora and fauna)</li> <li>Technical support services (e.g., agricultural extension and small business)</li> <li>Demonstration projects (e.g., crop production, soil conservation, and water harvesting)</li> </ul>
Consulting services	<ul style="list-style-type: none"> <li>Any costs relating to consultant services during implementation</li> </ul>
Training and fellowships	<ul style="list-style-type: none"> <li>Technical training for project operations (e.g., training in water or wastewater treatment, and hydrological modeling for reservoir operations in a water project)</li> <li>Training in project and enterprise management (finance and accounting, etc.)</li> <li>Other training (e.g., participatory methods)</li> </ul>
Land acquisition and resettlement	<ul style="list-style-type: none"> <li>Land purchase</li> <li>Compensation for loss of assets and livelihood</li> <li>Cost to resettle displaced persons (new housing, new land, retraining, moving costs, and costs to assist the host community, etc.)</li> <li>Land acquisition and resettlement monitoring</li> </ul>
Environmental protection	<ul style="list-style-type: none"> <li>Any costs of construction and procedures relating to environmental protection during project implementation</li> </ul>
Taxes and duties	<ul style="list-style-type: none"> <li>Value added tax and other taxes and duties on works, equipment and goods, and services</li> </ul>
Project management and others	<ul style="list-style-type: none"> <li>Project reporting, project audits</li> <li>Project accounting and financial management</li> <li>Funds for the purchase of initial inventories of materials and supplies and for the financing of startup activities for project administration and operation (no double-counting with other items)</li> <li>Implementation of management software and methods (e.g., accounting software and project management procedures)</li> <li>Assistance in developing new institutions</li> <li>Any costs related to bid document preparation</li> <li>Any other costs relating to project management</li> </ul>

Source: Asian Development Bank. 2022. [Cost Estimation in Sovereign Operations, Technical Guidance Note](#)



Several guidance materials and templates exist to help project officers to develop cost breakdowns an intervention from an idea into a detailed design. The following guidance is available from central agencies for the different Government of Papua New Guinea financing sources.

- **General guidance on budgeting and costing** is provided in the Department of Treasury's *Budget Manual* from 2008. Section 10 focuses on costings. The *Consolidated Budget Operating Rules* from 2017 ([2015 version](#) available online) outlines guidance for preparing a Budget Business Case following approval of an initial concept for a new project.
- For the **recurrent budget**, the annual budget circular and information sessions provide guidance and templates for the budgeting of new priorities in Stage 1 and ongoing activities in Stage 2 of the budget preparation process, using the economic classification breakdown of the Chart of Accounts (3-digit level: 211 Salaries & Allowances, 212 Wages, etc.).
- For the **capital budget's PIP**, the Department of National Planning and Monitoring's *PIP Guidelines* from 2007 (currently being updated) include templates for the Project Identification Document (PID) and the Project Formulation Document (PFD), both with a high-level cost table.
- For the **capital budget's SIP**, the Department of Implementation and Rural Development's *SIP Administrative Guidelines* (4A/2019) include templates for the PID (without costing information) and the PFD (with high-level cost breakdown).

Climate funds as well as bilateral and multilateral development partners also produce guidance and templates for the development of costings and project budgets. As discussed above, these are generally prepared by staff of the partner organization, requesting specific information inputs from government counterparts in the process as needed. Selected examples are listed below, with further information available online on respective development partner websites.

- **GCF** provides detailed guides and templates, including for Concept Notes, Funding Proposals, and [Detailed Budget Plans](#). For smaller projects following the simplified approval process, Concept Note, Funding Proposal, and [Budget](#) templates are also available, together with an extended list of supporting documents, including for [economic and financial analysis](#).
- **ADB** does not publish templates, but high-level guidance on cost estimates, financial analysis, and economic analysis of projects as part of an [Operations Manual](#), a [Technical Guidance Note: Cost Estimation in Sovereign Operations](#), and [Examples of Good Practice: Cost Estimates and Financing Plans](#).
- **USAID** publishes detailed budgeting templates and guidance for its projects, including a [Budget Template](#), a sample [Detailed Budget](#), and [Budget Instructions and Cost Principles](#).

## Annex 2. Climate change adaptation options factsheet tool template

Climate change adaptation options Factsheet						
<b>Adaptation option</b>	Include the name of the adaptation option			<b>Number</b>	Assign a number to the adaptation option for quick identification	
<b>Sector</b>		<b>Responsible institution</b>	Institution responsible for implementation			
<b>Climate risks addressed</b>	Describe which climate change impact(s) does the option address					
<b>Intervention area and target beneficiaries</b>	Geographical location that the option will target, size and type of beneficiaries					
<b>Expected adaptation impacts in the sector</b>	Describe how the option aims to contribute to increasing adaptive capacity and/or reducing vulnerability in the sector					
<b>Activities/actions included</b>	Summarize the main actions included in the adaptation option					
<b>Link to PNG's adaptation priority areas</b>	Select the key priority adaptation areas that the option aims to address. For more information see <a href="#">Papua New Guinea's Enhanced NDC 2020</a> .			1. Coastal flooding and sea level rise		
				2. Inland flooding		
				3. Food insecurity		
				4. Cities and climate change		
				5. Climate-induced migration		
				6. Damage to coral reefs		
				7. Malaria and vector-borne diseases		
				8. Water and sanitation		
				9. Landslides		
<b>Alignment with national development priorities</b>	Specify the national and sectoral policies to which the option will contribute (for more information see Annexes 1 and 2 of <a href="#">Papua New Guinea's GCF country programme</a> )					
<b>Expected climate, social, economic and environmental benefits</b>	Briefly explain the social and environmental benefits that are expected to be generated by the adaptation option.					
<b>Potential environmental and social risks</b>	Describe the potential risks of the adaptation options and if measures have been identified to mitigate these risks.					
<b>Time frame for implementation</b>	Short term (five years)		Medium term (10 years)		Long term (more than 10 years)	

<b>Synergies with other initiatives</b>	Describe existing or past initiatives that the adaptation option can build on or scale up
<b>Success and limiting factors</b>	Opportunities or constraints for successful implementation of the option based on institutional experience or implementation of similar initiatives.
<b>Estimated cost</b>	Include initial ballpark estimates covering investment and recurrent costs including: (Indicative) upfront cost of the technologies/investment and its implementation, and annual (recurrent) operational and maintenance cost.
<b>Potential financing sources (including national sources)</b>	Include potential sources of financing (including national and international public sources of finance, as well as from the private sector).

## Annex 3. Criteria for the appraisal of adaptation options

The proposed criteria seek to allow the prioritization of adaptation options that: A) help to enhance adaptation and increase resilience to climate risks; B) have a positive impact on development, climate, environmental, social and economic objectives; and C) are feasible to implement, monitor and evaluate. Table A3.1 outlines a list of appraisal criteria based on these objectives and is aligned with the Key Result Areas (KRA) included in the MTDP III. The appraisal criteria are further described below.

**Table A3.1. Appraisal criteria and alignment with MTDP III.**

Appraisal criteria	Guiding questions	Link to existing appraisal tools in PNG	Alignment with MTDP III
<b>A. Enhance adaptation and increase resilience to climate risks</b>			
A.1 High impact potential	a) What is the size of the beneficiary group and potential impact of the investment?  b) How does the option contribute to build adaptive capacity and reduce vulnerability in the sector?	No Objection Procedure (sub-criteria 1.1)  MCA Tool (sub-criteria i)	KRA 1-3 KRA 5 KRA 7-8
A.2 Types of beneficiaries targeted	Is the adaptation option targeting different types of vulnerable population (youth, women, smallholders)?	No Objection Procedure (sub-criteria 5.2)  MCA Tool (sub-criteria 13)	KRA 3
A.3 Consistency with national adaptation goals	Is the adaptation option consistent with PNG's nine adaptation priority areas?	No Objection Procedure (sub-criteria 3.1)  MCA Tool (sub-criteria 6)	KRA 7
<b>B. Impact on development, climate, environmental, social and economic objectives</b>			
B.1 National and sectoral policy and strategy alignment	Does the adaptation option support development objectives in national and sectoral policies?	No Objection Procedure (sub-criteria 3.1)  MCA Tool (sub-criteria 6)	KRA 6
B.2 Environmental, economic, social, and climate co-benefits	Can the option generate positive co-benefits (social, economic, environmental, climate change mitigation)?	No Objection Procedure (sub-criteria 4.1)  MCA Tool (sub-criteria 11)	KRA 1 KRA 3 KRA 7 KRA 8
B.3 Potential environmental and social risks	Are there potential unintended consequences from implementing the adaptation option (e.g., cultural losses, increased deforestation, damaging marine or coastal areas, affecting cultural heritage sites)?	No Objection Procedure (sub-criteria 3.5)  MCA Tool (sub-criteria 10)	KRA 7
<b>C. Feasible to implement, monitor and evaluate</b>			
C.1 Implementation in the short-term	Is it possible to implement the adaptation option in the short-term as first steps of a long-term adaptation strategy?	MCA Tool (ranking and prioritisation)	KRA 7
C.2 National and sectoral	Can the adaptation option be implemented complying with existing national and	No Objection Procedure (sub-criteria 3.2)	KRA 4 KRA 6

Appraisal criteria	Guiding questions	Link to existing appraisal tools in PNG	Alignment with MTDP III
regulatory compliance	sectoral regulatory standards and Codes of Practice?	MCA Tool (sub-criteria 7)	
C.3 Institutional capacity	Does the sectoral institution have the capacity needed to implement the adaptation option and monitor and evaluate its results?	No Objection Procedure (sub-criteria 2.2) MCA Tool (sub-criteria 3)	KRA 6
C.4 Synergies with other initiatives	Can the adaptation option build upon existing programs and/or scale up past projects/initiatives?	No Objection Procedure (sub-criteria 3.3) MCA Tool (sub-criteria 8)	KRA 7
C.5 Social and cultural acceptability	Have similar interventions been implemented successfully in the intervention area? Is the adaptation option well adopted and/or supported by the local/traditional community?	No Objection Procedure (sub-criteria 5.1) MCA Tool (sub-criteria 12)	KRA 3 KRA 6
C.6 Economic costs and benefits ( <i>optional</i> )	Do the economic benefits of the option outweigh its costs?	No Objection Procedure (sub-criteria 6.1, 6.2) MCA Tool (sub-criteria 15, 16)	KRA 6

## A. Enhance adaptation and increase resilience to key climate risks.

### A.1 High impact potential

#### A.1.1 Adaptation impact

Sector specific adaptation plans aim to integrate options that reduce sectoral vulnerabilities to the adverse impacts of climate change. Therefore, an important criterion is the impact potential on reduced vulnerability or increased adaptive capacity, measured by the number of beneficiaries (e.g., vulnerable people positively impacted by the adaptation option). The number of beneficiaries will depend on the type of adaptation measure and intervention area. To facilitate the comparison between adaptation options, it is recommended to calculate the number of beneficiaries relative to the total population in the intervention area.

#### A.1.2 Sectoral adaptation impact

In addition to the general indicator for adaptation impact, there are other specific indicators that can help assess the adaptation options in terms of their impact. Annex 5 provides examples of sector-specific indicators for the adaptation measures under the sectoral strategies established in the NAP. The indicators were compiled from the GCF Results Framework, Enhanced NDC 2020, and complemented with additional examples from best practice.

## A.2 Types of beneficiaries targeted

The MTDP III, seeks equal opportunities for all citizens to benefit from development (KRA 3.5), highlighting the need to address gender inequality and promote equal opportunities for women. PNG’s adaptation actions aim to comprise tangible and intangible activities that aim to benefit targeted populations. These include smallholder farmers, micro, small and medium enterprises in business, community-based organizations, clans, and villages, with a particular focus on the most vulnerable groups, including women, children, and young persons.

It is key to ensure a socially inclusive approach to climate change adaptation so that adaptation measures do not exacerbate existing social inequalities. Therefore, it is important to promote that adaptation options take into account gender and social inclusion considerations and that particularly vulnerable populations, including women, youth and persons with disabilities, appropriately participate and benefit from adaptation options.

## A.3 Consistency with national adaptation goals

To strengthen adaptation action and target efforts to address the expected impacts of climate change in PNG, it is critical that adaptation options in sector-specific adaptation plans are consistent with Papua New Guinea’s nine adaptation priority areas. The adaptation priority areas have been consistently identified in key national documents, including the NDC, the CCMA of 2015, the National Communications to the UNFCCC, the CCDA Climate Change Corporate Plan, the GCF Papua New Guinea Country Programme, the Revised Enhanced NDC and the NAP. The nine adaptation priority areas are summarized in Table A3.2.

**Table A3.2. Key priority adaptation areas in Papua New Guinea and links to priority sectors in the NAP.**

Adaptation priority areas	Priority development sectors			
	Agriculture	Health	Transport	Infrastructure
1. Coastal flooding and sea level rise	•	•	•	•
2. Inland flooding	•	•	•	•
3. Food insecurity	•	•		
4. Cities and climate change		•	•	•
5. Climate-induced migration		•	•	•
6. Damage to coral reefs	•			•
7. Malaria and vector-borne diseases		•		
8. Water and sanitation		•		•
9. Landslides		•	•	•

Source: adapted from PNG’s enhanced NDC.

## B. Impact on development, social and environmental objectives.

### B.1 National and sectoral policy and strategy alignment

Ensuring alignment of adaptation options with development planning is needed to streamline planning and promote policy coherence. Linking adaptation measures with development goals can help channel government resources to development priorities while implementing adaptation measures, which can facilitate implementation, promote and efficient use of existing resources, tools, and information.

## B.2 Environmental, Economic, Social Co-benefits

Sustainable economic development is a priority agenda for the Government of PNG. Planning and implementing adaptation actions in consideration of mitigation and sustainable development benefits, can help to achieve positive benefits beyond climate change adaptation, such as conservation or improvement of ecosystems, job creation, reduced poverty, better health, etc. In addition, prioritizing adaptation options that generate positive mitigation benefits can create synergies between mitigation and adaptation initiatives to support mitigation goals in the country. However, it is important to note that opportunities for synergies between adaptation and mitigation are greater in some sectors (e.g., agriculture, forestry, energy) but may be limited in others (e.g., health).

## B.3 Potential environmental and social risks

To promote that the adaptation options contribute to sustainable development, it is important to assess whether the proposed options could generate unintended consequences from its implementation. Potential risks of the adaptation option can be identified based on existing information in the literature and assessed by sectoral experts and other stakeholders in the appraisal process based on their experience implementing similar options.

### Why consider potential risks of adaptation options?

Adaptation investments that can be efficiently implemented over the short term can sometimes prove costly over the long term if they create new or higher risks. For example, coastal infrastructure investments may provide short-term needed protection but can also lock future urban, economic, and population growth into high-risk areas, which may raise the need of several follow-up protection investments that can raise the costs and, in the future, become unaffordable.

Retreat and relocation strategies provide another example. Decisions regarding retreat and relocation are highly complex and require thorough planning, as well as careful consultation and compensation processes, and consideration of potential negative impacts of the relocation, in line with social safeguards.

Source: adapted from Hallegatte et al. (2002)

## C. Feasible to implement, monitor and evaluate

### C.1 Implementation in the short-term

Adaptation measures that can be implemented in the short term (e.g., five years) can constitute the first steps of a long-term strategy. Prioritizing adaptation measures that can be implemented in the short term can help to set up the foundation for future interventions (for example, by establishing appropriate institutional and governance frameworks), demonstrate positive impacts and benefits of adaptation investments that can be replicated and scaled up, and help focus attention on those measures required to prevent irreversible climate-induced impacts.

## **C.2 National and Sectoral regulatory compliance**

Aims to assess whether the option is consistent with the national and sectoral regulatory, policy and institutional framework to facilitate implementation that complies with existing national and sectoral regulatory standards and Codes of Practice. It is relevant to also consider if the implementation of the adaptation option requires the creation of new laws, changes in the regulation or new institutional arrangements, as these processes may require substantial time that may delay implementation.

## **C.3 Institutional capacity**

Implementing adaptation options will require financial, technical, and operational capacity at the sectoral level. Some sectoral institutions may have experience in implementing a similar type of intervention, available budget allocation or technical expertise that eases the implementation of certain types of adaptation measures. In addition, is it key that sectoral institutions have monitoring and evaluation systems or frameworks in place that allow the tracking of progress and provide feedback on the effectiveness of actions allowing the gradual improvement of adaptation strategies and interventions. These capacities need to be considered when appraising adaptation options to promote that the conditions for success are in place.

## **C.4 Synergies with other initiatives**

Aims to assess whether adaptation options can build upon existing programs and/or past projects to create synergies with other initiatives in the sector that can facilitate implementation. Existing programs could consider those being implemented by the government, development partners, and/or the private sector.

## **C.5 Social and cultural acceptability**

Development planning instruments in Papua New Guinea, such as the StaRS, underscore the need to foster the country's development in ways that learn from and build upon Papua New Guinea's cultural heritage. In particular, the StaRS recognises the need to establish policy measures for land and health that draw on Papua New Guinea ways to improve the effectiveness of service delivery in these sectors. Therefore, this sub-criterion aims to assess the potential acceptability of the adaptation option (e., if the adaptation measure has been implemented before in the intervention area, is well adopted and/or supported by the local/traditional community).



## Annex 4. Climate change adaptation appraisal tool

See Excel file Annex 1.4 Tool for Sectoral Planning Guidelines for climate change adaptation