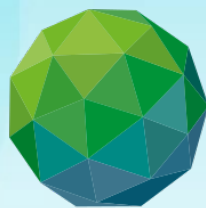




Vanuatu Rapid Climate Assessment Framework Inception Report

2023



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Vanuatu Rapid Climate Inception Report

FINAL

Prepared for Secretariat of the Pacific Regional Environment Programme (SPREP)

Prepared by Beca International Consultants Ltd

23 October 2023



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Appendices

Appendix A – Stakeholder Engagement Plan

Appendix B – Work Plan

Appendix C – Inception Meeting Agenda and Minutes

Revision History

Revision N°	Prepared By	Description	Date
A	Sophie Andrew / Kristin Renoux	For client review	23 Oct 2023

Document Acceptance

Action	Name	Signed	Date
Prepared by	Sophie Andrews, Kristin Renoux, Carlos Carvajal, Kayla Baker		23 Oct 2023
Reviewed by	Mike Allis		23 Oct 2023
Approved by	Cushla Loomb		23 Oct 2023
on behalf of	Beca International Consultants Limited (Beca)		

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1 Introduction

1.1 Project background

Vanuatu is subject to multiple natural hazards such as tropical cyclones, earthquakes, intense rainfall, volcanic eruptions and tsunamis. The impact of many these natural hazards is increasing due to climate change. Tropical cyclones have been particularly severe in the recent decade resulting in significant damage to infrastructure and communities. To minimise future impacts, it is important that the key Vanuatu sectors have a good understanding of the climate risks and how they may change over time so that informed decisions can be made, and the resilience of its communities enhanced.

The scope of this project is the development of a Rapid Climate Risk (RCR) framework and methodology that can be applied from within Vanuatu to aid in assessing risks and prioritising response actions.

An effective climate risk framework for Vanuatu is one that will be able to be easily applied on the ground, relevant to a variety of sectors and designed in such a way that the outputs inform good long-term decision making.

The framework will be tested and deployed through a case study in the Tourism Sector (including infrastructure and fisheries associated with tourism).

1.2 Purpose of report

This Inception Report confirms the scope of work, programme, the stakeholders, the contributions and roles in the risk framework, how we will work successfully together to deliver this project and any other relevant information as discussed in the Inception Meeting.

The Inception Meeting for this project was held on 4 October 2023. The Agenda and Minutes from the meeting are attached as Appendix C.

The Inception Report includes:

- Programme of work and deliverables at each stage
- Planned stakeholder consultation and engagement
- Scope of the rapid climate risk framework and methodology
- Scope of the sector case study, including how the rapid climate risk framework will be applied to the sector case study on the Tourism and associated infrastructure and fisheries sectors (hereafter Tourism sector)
- Scope of the financial projections mechanism

1.3 Confirmation of scope and programme

1.3.1 Scope revision and project meeting outcomes

The initial scope for this project was revised to deliver as much as possible of the original project within the existing Green Climate Fund (GCF) Project programme constraints which emerged during contracting discussions.

The revised proposal was discussed and agreed with SPREP ahead of the Inception Meeting.

The key change to the original proposal was to remove the development of training materials guidance and hosting of training sessions in Vanuatu from the project scope and deliverables. Beca and SPREP noted that

this part of the project could be agreed and delivered in the new year (2024) depending on the availability of GCF finance.

In recognition of the reduced timeframe, the following further changes were agreed:

- Workstreams proceeding in parallel; development of framework and methodology in conjunction with undertaking the case study for Tourism (i.e. 'testing as we go')
- A condensed consultation process: 3x multi-stakeholder consultation sessions (to replace individual stakeholder meetings)
- Consultation meetings are to be organised and coordinated by SPREP and the Department of Tourism and supported by the Beca in country representative.
- Agreement on 18 stakeholders to include in consultation (refer Stakeholder Consultation plan and agreed list of stakeholders in Appendix A).
- Arrangement by SPREP of information sharing session with VanKIRAP climate information services partner CSIRO (10-10-2023).

The RCR framework will be developed with the intention that it can eventually be applied to the 5 key sectors for which CSIRO have focussed their climate information on and where stakeholder engagement has been undertaken. The 5 sectors are Infrastructure, Fisheries, Water, Agriculture and Tourism, with the RCR framework case study being in the Tourism sector specifically.

The RCR framework; will be developed to guide the user through an assessment of the potential direct physical risks. The scope of the RCR does not include supply chain risks, governance risks, transition risks (those risks arising from a rapid decarbonisation of the economy), cascading (the cross-sector sequence of risks from an initial direct event) and compounding risks (e.g. risk from extreme rain and extreme water levels at the same time).

The scope is outlined in full in Section 3.

1.3.2 Revised Programme

The revised programme for the project and deliverables is shown below. A more detailed plan is included in Appendix B to this report.

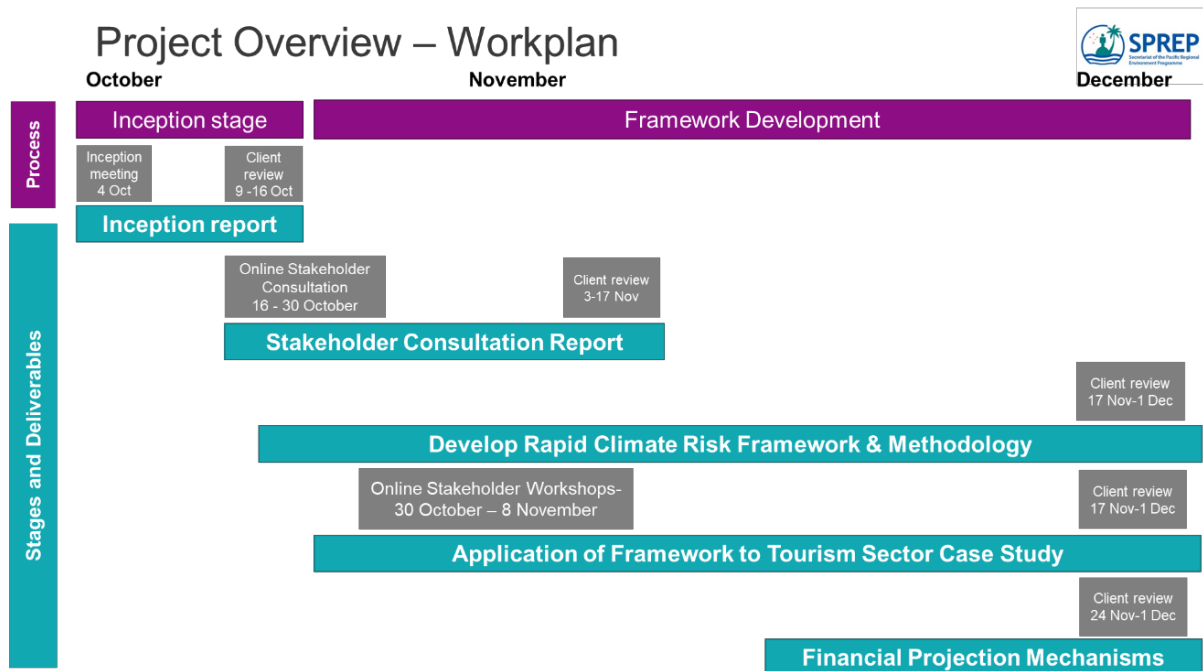


Figure 1 Diagram of Part 1 of project programme

We note that the compressed timeline requires timely review (review period indicated above) from SPREP and Department of Tourism for each deliverable.

Final deliverables are due on 8 December 2023 with the contract ending at this time. As agreed in the Inception meeting, if review comments are not received within the allocated client review window (as shown in the Work Plan above) then the draft deliverable will be considered the final.

2 Information Review

A brief information review has been carried out as part of this inception phase to understand what climate risk data exists and identify any data gaps that would need to be filled to ensure the successful development and implementation of the RCR framework. This information falls into two categories 1) climate hazard variables applicable to all sectors, and 2) sector specific information (e.g. asset, operations) on vulnerability to potential climate change impacts.

2.1 Climate hazard variables

The information that will be used for the future projections of climate hazards in the case study is briefly detailed below (Table 1), including the historical baseline, projection horizon, model ensemble used (where applicable) and the source. This information will predominantly be from the Vanuatu Climate Futures Portal (VanKIRAP), supplemented by other sources where necessary. There are a small number of identified data gaps (Table 2) around catchment-based flood mapping and vertical land movement. An understanding of which of the global climate models were used and potential differences to the latest models will also need to be explored further through the project.

The climate variable information to be used for the RCR case study assessment will reflect the information available at the time the framework is developed. This information will be predominantly from the Vanuatu Climate Futures Portal (VanKIRAP) portal as it stands 13th October 2023, supplemented by additional information shared by CSIRO and SPREP if in time for the framework development. No new climate hazards or climate variability information will be sought or updated. There will not be any on-the-ground consultation, surveying or mapping completed. An information review has been carried out for the availability of relevant

climate variables, but this work does not include a provision for assessing the technical robustness of the hazards information acquired; relying instead on CSIRO's quality assurance processes (as the provider of that information). Non climate hazards such as tsunamis, earthquakes and volcanic eruption are excluded from the RCR framework

Table 1 Climate variable information availability. Note that CMIP5 projections are only available within VanKIRAP portal for two emissions scenarios; low (RCP2.6) and high (RCP8.5).

Climate Variable	Historical Baseline	Projected Period	Source
Coastal Inundation flood mapping (1, 10 & 100-year ARI at increments of 0.25m SLR to 10m)	1995	CMIP5 (low, high) 2020-2039 2040-2059 2060-2079 2080-2099	VanKIRAP
Extreme Rainfall (Yearly maximum rainfall for given ARI)	1985	CMIP5 (low, high) 2040-2070 2070-2100	VanKIRAP
Total rainfall (annual, seasonal and monthly scale) or anomaly	1995	CMIP5 (low, high) 2020-2039 2040-2059 2060-2079 2080-2099	VanKIRAP, CSIRO and SPREP publication
Sea level rise anomaly	1995	CMIP5 (low, high) 2100	CSIRO and SPREP publication
Temperature (min, mean and max annual)	1995	CMIP5 (low, high) 2020-2039 2040-2059 2060-2079 2080-2099	VanKIRAP
Tropical cyclone frequency and intensity (% increase)	1985	CMIP5 (low, high) 2070-2100	VanKIRAP
Tropical cyclones and extreme rainfall	-	2°C global warming	CSIRO and SPREP publication
Tropical cyclone wind speed (% increase)	1985	CMIP5 (low, high) 2070-2100	VanKIRAP
Aragonite Saturation State (Proxy for ocean acidification)	-	CMIP5 (low, high) 2100	World Bank
Marine heatwave projections (multiple parameters)	-	CMIP5 (low, high) 2020-2039 2040-2059 2060-2079 2080-2099	VanKIRAP

Table 2 Gaps or issues identified in review of climate variable information

Variable	Issue	Approach
Catchment based flood hazard modelling and mapping	<p>Other consultants have been commissioned within the VanKIRAP programme to produce catchment-based flood mapping for selected catchments in Vanuatu (We understand the catchments modelled are the Cara catchment on Santo and the Malae catchment on Efato). We understand NIWA and another consultant are leading this and interfacing with CSIRO and the PMU.</p> <p>However, draft or final results are not expected to be available or uploaded to the VanKIRAP portal until 13 November 2023 (pers comm. email Geoff Gooley 12-10-2023).</p>	<p>The outputs of flood hazard mapping are anticipated to conform to typical flood mapping outputs; maps of flooding extent, depth and velocity for a range of storm magnitudes (rainfall intensity-duration ARI), climate change conditions (high/low emissions and SLR) and future timeframes (short-long term).</p> <p>We will interface with CSIRO and the flood modelling consultants to understand if their anticipated outputs support inclusion within the RCR framework.</p>
Vertical Land Movement (VLM)	<p>Vanuatu is in a seismically active region and subject to tectonically driven uplift and subsidence. This vertical land movement can accelerate or offset the apparent sea-level rise rates at the coast.</p> <p>It is unclear whether VLM is included within the VanKIRAP portal sea-level rise future scenarios.</p>	<p>We will use VanKIRAP portal information on SLR as it stands.</p> <p>We will include a link to available VLM studies within the RCR framework methodology and identify this as an additional step for advanced users to consider in sea-level rise impacts.</p>
All	<p>The VanKIRAP portal climate information services is based on CMIP5 projections (from the AR5 2013 suite of IPCC reports). Newer climate projections are available (CMIP6) from the latest IPCC reporting phase (2021, AR6) but are not included.</p>	<p>Continue to use VanKIRAP and CSIRO climate information products as they exist. Request statement from CSIRO about alignment of CMIP5 projections with CMIP6 at national scale across Vanuatu.</p>

2.2 Sector specific information

The sector specific information needed to prepare an RCR framework falls into two main categories: assets that are used, owned or necessary to each sector's activities (e.g. buildings, wharfs) and the operations, services and activities that are carried out within the sector. Initial information sources relevant for multiple sectors in Vanuatu are indicated in Table 3. The consultation phase will be used to discover and request further information on assets and operations to inform RCR framework development.

Table 3 Nationwide sector related information available

Name	Description	Source
Open street map	Open-source database of built assets (buildings, roads) with some building uses. No QA or validation available.	OSM (link)
Pacific Data Hub maps and data catalogue	Hub for pacific datasets. Internationally sourced mapping on ocean boundaries, reefs, wind zones and some population information.	PDH (link)
Pacific Climate Change programme (PACCSAP)	Pacific Climate Change information – based on AR5 assessment. Prepared by SPREP and CSIRO. Superseded by VanKIRAP.	PACCSAP (link)
Climate Change Knowledge Portal (World Bank)	World Bank Country Profiles (CMIP5). Superseded by VanKIRAP.	World Bank (link)
NextGen projections (2021)	Current and Future Climate for Vanuatu. Superseded by VanKIRAP.	RCCAP (link)
Pacific Risk Information System (PACRIS)	Data from 2012-2015 research. GIS and tabular data includes partial coverage of built and natural environment information.	PCRAFI (link)
Case study ‘infobytes’ information for 5 key sectors [Note – these outputs are not accessible at the time of writing, hence the quality and type of information is unknown]	Example case study information for: <ul style="list-style-type: none"> - Infrastructure (Road length exposed to 3x ARI coastal flooding events with SLR) - Fisheries (8 fishery sites and national mapping of coastal habitats (mangroves, coral) overlaid with recent future marine heatwave parameters) - Tourism (1 tourism site exposure to 3x ARI coastal flooding events) - Agriculture (suitability of 5x crops under climate scenarios) - Water (maps of average monthly rainfall and temperature) 	CSIRO within VanKIRAP

For the tourism case study, the sector specific information that has been located is detailed below in Table 4. Similar to the climate variable information, there have been gaps identified in the information available, this is detailed in Table 4. It is noted that additional information on past disruptions to tourism activities and impacts on assets will be sought through engagement.

Table 4 Tourism Sector specific information available

Name	Description	Source
Case study ‘infobytes’ information for 5 key sectors	Example case study information for: <ul style="list-style-type: none"> - Tourism (1 tourism site exposure to 3x ARI coastal flooding events) 	CSIRO within VanKIRAP
Allen Coral Atlas	Mapping of benthic and geomorphic characteristics along with reef locations.	VanKIRAP
Fisheries statistics	Employment, vessel fleet size and limited catch information for varied time periods.	Food and Agriculture Organization of the United Nations (Link)

Name	Description	Source
Open street map data	Open-source database of built assets (buildings, roads) with some building uses. No QA or validation available.	https://www.openstreetmap.org
Vanuatu Sustainable Tourism Strategy 2021-2025	National strategy to implement a higher value low impact diversified tourism model	Vanuatu Sustainable Tourism Strategy 2021-2025
Vanuatu Pacific Tourism Sector Snapshot	Tourism sector overview and status for 2021	Pacific Private Sector Development Initiative report (link)
Pacific Data Hub maps	Hub for pacific datasets. Internationally sourced mapping data on administrative and ocean boundaries, reefs, wind zones and some population information.	https://map.pacificdata.org/

Table 5 Gaps identified in review of required information for application of RCR framework to Tourism case study

Variable	Issue	Approach
Sector contribution to national GDP	To determine past, current and projected contribution to assess future sectorial resilience.	We will interface with Department of Tourism to understand sectorial contribution.
Storm recovery spending invested in the sector	The ability for a sector to recover after a natural disaster will alter its vulnerability to climate change in the future. If there is contingency storm recovery funding then the vulnerability could be reduced.	We will interface with Department of Tourism to understand storm recovery spending post-events and proactively investment towards future events
Future projected investment into the sector	To understand current and future changes in investment strategy that could influence risk and vulnerability	We will interface with Department of Tourism to understand future investment and the current national sectorial investment strategy.
Fisheries statistics and logistics information.	Limited data from the Food and Agriculture Organization of the United Nations regarding fishery statistics.	We will interface with Department of Tourism to obtain required information
Asset information across all key sectors (e.g. buildings, structures, transport, hospitality, food, recreation, ports, electricity and network)	To determine the risk of climate change, information regarding the assets owned / used by the sector and their adaptive capacity/ sensitivity to climate change needs to be determined. As part of this, the location of assets is required to overlay with the climate hazard exposures.	We will interface with Department of Tourism to obtain required information
Tourism value chain analysis report(s)	To determine the direct and indirect impact of climate risks on the sector	We will interface with Department of Tourism to obtain required information
Policy and sectoral reports for each of the 5 sectors.	Reports including some identified vulnerabilities and risks for each sector. Access would provide	Request access to these reports from PMU (Sunny)

Variable	Issue	Approach
	background information for RCR framework development.	
Government (national or local) engagement and/ or survey information.	To supplement the stakeholder consultation workshops, any government engagement and/ or surveys regarding the sectors in terms of climate hazards, risks or vulnerability would be highly useful.	We will interface with Department of Tourism to obtain required information

Regarding applying the RCR framework and methodology for Vanuatu to a sector case study (Tourism and associated infrastructure and fisheries sectors), the preliminary analysis will rely on the information and consultation procedures collected and reported in CSIRO's sector case studies for Vanuatu. The case study analyses will incorporate the new information provided during the virtual consultation stage of this work. In the absence of information, any embedded assumptions in the framework development and case study analysis will be discussed with Department of Tourism and described in the methodology and results of the case study report.

3 Revised Project Scope

3.1 Develop a rapid climate risk framework and methodology for Vanuatu

A rapid climate risk (RCR) assessment is a method of quickly and effectively screening risks which may arise through climate change. The framework underpinning a national-scale RCR will be high-level to cover a broad set of potential climate change hazards and consider the range of possible impacts on relevant sectors across the country.

A RCR, rather than a detailed risk assessment, is targeted for use in resource-constrained situations and using qualitative, non-technical information to build an evidence base for identifying risks and prioritizing adaptation actions. A RCR is likely to highlight key areas of high impact or risk which could be the targets of a future detailed study at district level.

We will discuss with users of the RCR through engagement the potential structuring of the framework but we will follow similar internationally available examples, modified to suit the specific Vanuatu context and user needs.

Applying this framework will allow a sector within Vanuatu to produce:

- A qualitative overview of relevant climate hazards, including historical trends and projections.
- A summary of key climate risks across the relevant sectors
- Potential impacts across the relevant sectors.

A RCR framework comprises three assessment steps:

1. A climate hazard assessment step which identifies the probability, intensity and timescale of the key hazards and identifying areas that may be particularly impacted, taking into account the historical trends and current situation, as well as future scenarios based on available scientific evidence.
 - **We assume CSIRO and the Van-KIRAP portal will provide all evidence and information for climate hazards and have not allowed for any climate hazard assessments, mapping or**

analysis. We will consult with SPREP and CSIRO on the relevant and available climate hazard variables so the RCR framework aligns with VanKIRAP climate products developed by CSIRO.

- We will review outputs from the VanKIRAP project to understand the available climate information products and consider how they may be carried over to the RCR framework and methodology. Section 2 above outlines the availability of relevant climate variables within VanKIRAP but does not assess the technical robustness of the information; we rely instead on CSIRO's quality assurance processes.
 - The climate variable information to be used for the RCR assessment will reflect the information available at the time the framework is developed. This information will be predominantly from the Vanuatu Climate Futures Portal (VanKIRAP) portal as it stands at submission of the draft inception report (13th October 2023), supplemented by additional information shared by CSIRO and SPREP. No new climate hazards or climate variability information will be sought or updated. There will not be any on-the-ground consultation, surveying or mapping completed.
 - The VanKIRAP climate information portal data generally includes maps of climate variables under 2 future emissions trajectories (low - RCP2.6 and high - RCP8.5) at 4 future timeframes (2030, 2050, 2070, 2090), except for sea-level rise which is in 0.25m increments to 10m above present day. The RCR will utilise the RCP 8.5 for the risk assessment and consider present, 2050 and 2090 timescales).
2. An impact screening step which will identify potential consequences of the risk collectively on health and safety, financial, environmental and legal.

This includes:

- Understanding the scale of *exposure* of the Sector to climate hazards, from a high, medium or low, and based on how much of the sector-specific features (e.g. land, assets, population and systems) may be at risk from the climate hazards.
 - Assess *vulnerability* of the Sector to climate hazards: qualitative evaluation of how susceptible the exposed assets and operations are to climate risks. Consider factors like sensitivity (how easily they can be affected) and adaptive capacity (how well they can cope).
 - Analyse *impacts* to the Sector: Qualitatively understand the potential consequences of climate risks on different sector components, like infrastructure, agriculture, activities, health, or the environment.
 - As described above, for the timeframe and climate scenarios for the RCR, we will utilise the high emissions projection (RCP 8.5) at a present day, mid-century and end century timeframe. Selection of the high-emissions scenario is a conservative approach to identifying and prioritising actions and adaptation steps for risks that are likely to emerge sooner.
3. A risk assessment step to help users to identify their key climate risks. The framework will provide high level information on how to prioritize risks so that sectors can make informed decisions on actions and investment into climate adaptation and resilience. The prioritization will include aspects such as:
- The qualitative risk rating framework and descriptions
 - Considering existing risk mitigations and adaptations: what actions are already in place to deal with climate risks.
 - Whether there are wider plans programmes of work that mean that certain risks are prioritized to gain efficiencies in addressing them
 - Confidence and urgency level for risks

- Identify adaptation options: Look for different ways to reduce the identified risks. Explore both physical (like building protections) and non-physical (like policies or community involvement) options.
- Consider costs and benefits: Evaluate the costs, advantages, and potential trade-offs associated with different adaptation options, including discussion about financial, economic, social, and environmental factors. This will be informed by the Financial Projections Mechanisms (see Section 3.3)

We aim to develop the RCR assessment framework in an easy-to-use format, such as an excel spreadsheet. The advantage of this format is that it can include the relevant formulas for scoring risks and enable users to filter and sort climate hazards according to their sector or element at risk. We will discuss the possible formats of the framework with stakeholders during the consultation sessions.

The RCR assessment framework will use qualitative criteria to score the exposure, impact and confidence of each climate risk. For example, low, medium, high, or severe for impacts scoring criteria. We will develop these criteria in collaboration with SPREP, VMGD, and the Department of Tourism. We will also supplement these criteria with quantitative data from the Van-KIRAP Portal and CSIRO products, where possible.

At the conclusion of this phase, we will present the draft Rapid Climate Risk Assessment Framework to SPREP, VMGD, Department of Tourism and project stakeholders. Following feedback from SPREP, VMGD, Department of Tourism and project stakeholders, we will deliver the final rapid climate risk assessment framework (Deliverable 3).

a) Apply the rapid climate risk framework and methodology for Vanuatu to sector case study – Tourism (to be selected) and associated infrastructure and fisheries sectors.

We will apply the RCR framework and methodology for Vanuatu to a sector case study site (Tourism and associated infrastructure and fisheries sectors), including virtual workshop consultation.

The specific site for the case study will be determined with the Department of Tourism ahead of consultation; we anticipate this will be either a countrywide but high-level application to the Tourism sector, or a district/island scale application to at higher granularity than a national level. We do not anticipate a site-specific assessment such as application to Port Vila city.

To apply the RCR framework we will draw on current and future risks based on information provided by CSIRO as part of the VanKIRAP project and intersect this information with the information on exposure, vulnerability, and adaptive capacity across the tourism sector (and associated infrastructure and fisheries) drawn from the initial stakeholder consultation phase, and our own experience with climate risks throughout the pacific.

The RCR framework will be used to prioritize the top 4-5 risks for the Tourism sector (nonspatial) and specifically include an identification of risks associated with tourism infrastructure such as ports/airports and fisheries associated with the tourism sector. These key risks will be used as the basis for the identification of potential adaptation measures for each risk (including in the main adaptation areas of Accommodate, Protect, Avoid and Retreat). In addition, our team will identify any urgent adaptation measures that may be required in the short-term across all risks identified for the Tourism Sector. These urgent adaptation measures will be limited to those risks where there is an immediate significant threat, where there is other adaptation or programmes planned or underway that adaptation measures could link to or where adaptation measures will inform longer term planning (such as monitoring measures).

Consultation regarding the case study will take place in the second phase of workshops and will entail only two 3-hour workshops due to the compressed project timeframe. These workshops will be virtual and will interact with the financial projection mechanisms task (Section 3.3).

We will produce a case study report (Deliverable 3) outlining the results of the RCR framework applied to the tourism sector. We will bring this as an outline draft to the second phase of consultation workshops (refer Figure 1), and will come to the workshops with an early draft of the pre-populated assessment on the Tourism sector to discuss where there are gaps or information to be incorporated. The workshops are an opportunity to iterate on its development. The final case study report will follow the RCR framework and provide simple, visual graphics and narrative that can be used by other sectors as a worked example of applying the RCR.

At these workshops we will seek to understand whether there are currently any adaptation projects underway for the risks identified, and to understand the adaptation shortfalls identified and use this to inform the identification of urgent adaptation measures.

3.2 Consultation

Virtual consultation will commence with the relevant stakeholders based in Vanuatu to understand their needs, roles, and contributions to the project.

It was agreed at the Inception Meeting that in view of the compressed timeframe to deliver this project, stakeholder consultation will be undertaken through grouped stakeholder sessions over a two-week period. In email exchanges between SPREP, the Department of Tourism and Beca following the Inception Meeting it was agreed that 3 sessions of 2 hours each will be proposed to the list of relevant stakeholders identified by SPREP and the Department of Tourism. The stakeholders will only be required to attend one session. These sessions will be coordinated by the Department of Tourism, who will invite the stakeholders to select a session and maintain the register of attendance for each session, and compile information provided from the stakeholders.

The stakeholder consultation will be led by Kristin Renoux and Mike Allis and supported by our local engagement specialist Hannington Alatoa.

We will begin this consultation by providing the relevant stakeholders with a brief description of the project and what we are seeking from them. We will then hold virtual consultation sessions with the stakeholders to understand their specific needs, what role they will play and how they will contribute to this project. This information will enable the team to identify very early on the level of information and awareness of climate hazards in Vanuatu, particular end user needs for the framework (such as what format may work best for users) to achieve the best use of the tool.

The information provided during the consultation will be recorded and captured in a Consultation Report to be delivered to the client at the end of the consultation process (Deliverable 4).

A detailed description of the proposed consultation is discussed in the stakeholder engagement plan which can be found in Appendix A of this document.

3.3 Financial projection mechanism

In line with our project proposal, we will engage virtually with key stakeholders identified by the Department of Tourism and utilize our local engagement specialist to develop the scope and requirements of the financial projection mechanism which is appropriate for tourism investment.

We anticipate that the framework of the projection mechanism will be developed closely following and building upon the rapid climate risk framework and methodology developed earlier in this assessment, where climate-related hazards and the impact of those hazards are defined.

For the development of financial projections related to these risks, we will consult with the key stakeholders identified in the inception stage to develop adaptation measures for the top 4-5 priority climate risks for the tourism sector. These high-level measures will cover the key adaptation approaches of Accommodate, Protect, Avoid and Retreat. It is anticipated that 2-3 main adaptation measures will be identified under each approach

that can be selected in the development of specific approaches. Following this, we will develop the financial projection mechanism, which will show the financial projection framework based on the different climate scenarios and the high-level adaptation measures developed for these scenarios.

Broadly, the development of the scenario analysis will define a set of plausible climate scenarios (based on the rapid climate risk framework), identify key variables or indicators within each scenario that are most likely to affect the tourism investment, and the respective adaptation strategies. This will then be developed into a mechanism that helps with the financial projection for the tourism investments.

4 Programme and Personnel

4.1 Project programme

The programme of works is attached as Appendix B of this report. It is important to note that the deliverables are as per the proposal with a compressed timeframe, running them in parallel due to the requirements of the funding for the project by the Green Climate Fund (GCF). The compressed timeline also requires timely review (review period indicated above) from SPREP and Department of Tourism for each deliverable.

Final deliverables are due on 8 December 2023 with the contract ending at this time. Unless otherwise agreed, if review comments are not received within the allocated client review window (as shown in the Work Plan above) then the draft deliverable will become the final.

4.2 Project team

The BICL project team is outlined below:



5 Client reporting and approval process

Beca will provide a fortnightly email update starting 24 October 2023 that will include up-to-date workplan, challenges, and budget update. If needed, a meeting could be scheduled with SPREP.

SPREP has advised that the Department of Tourism is the organisation providing the review of draft deliverables. SPREP will combine the comments from Department of Tourism and SPREP as prescribed within the deliverable deadlines.

6 Project Risks

The following project risks were discussed at the second part of the Inception Meeting, which was confined to only SPREP and Beca attendees:

Project Risks	Outcome from meeting
Time constraints	<ul style="list-style-type: none"> • Consultation will be led by Department of Tourism and facilitated with SPREP. • Both organisations are aware of the time constraints. • SPREP confirms that no comment equates to an assumption of approval by Department of Tourism
Stakeholder engagement	<ul style="list-style-type: none"> • Consultation needs will need to happen with the next couple of weeks of October 2023. • Consultation to be set up in time slots where stakeholders would sign in and provide input
Delay to availability of information	<ul style="list-style-type: none"> • In that eventuality, Beca will inform SPREP about the information gaps the implications of the gaps and mitigate by progressing by making certain assumptions. SPREP approved of that approach and asked to note of those assumptions in the methodology
Political Risk	<ul style="list-style-type: none"> • No possible delays immediately identified by SPREP or Government • SPREP will keep Beca informed about any change in political status

7 Financial Management

Beca International Consultants Ltd (BICL) will invoice SPREP in line with progress payments of fixed fees set out in the table below, which are taken from the legal agreement for this project.

It was noted during the Inception Meeting that the Vanuatu Department of Tourism will be the organisation undertaking the review of the deliverables, however SPREP will combine the comments from Department of Tourism and SPREP to meet the milestones in the legal agreement.

Milestone Date	Milestone /Deliverable	Milestone Payment (USD)
23 October 2023	Submission of Inception Meeting report including approved work-plan (10%)	16,486.20
24 November 2023	Acceptance of Final Stakeholders' consultation Report including scope, needs and roles clearly identified (10%)	16,486.20
8 December 2023	Acceptance of Final Rapid Climate Risk Assessment Framework and methodology –up to 30 pages (30%)	49,458.60
8 December 2023	Acceptance of Final Applied Case Study for Tourism and as-sociated infrastructure and fisheries in Vanuatu (up to 20 pages) (20%)	32,972.40
8 December 2023	Acceptance of Financial protection mechanism to assist in the development standard costs analysis for tourism investments (10%)	16,486.20
	TOTAL (inclusive of GST)	131,889.60

A

Appendix A – Stakeholder Engagement Plan



Vanuatu Stakeholder Engagement Plan

FINAL

Prepared for Secretariat of the Pacific Regional Environment Programme (SPREP)

Prepared by Beca International Consultants Ltd

23 October 2023



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Appendices

Appendix A – Register of Stakeholders

Revision History

Revision N°	Prepared By	Description	Date
1	Sophie Andrews, Kristin Renoux, Carlos Carvajal	For client review with inception report	23 October 2023

Document Acceptance

Action	Name	Signed	Date
Prepared by	Sophie Andrews, Kristin Renoux, Carlos Carvajal		23 October 2023
Reviewed by	Mike Allis		23 October 2023
Approved by	Cushla LOMB		23 October 2023
on behalf of	Beca International Consultants Limited		

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1 Purpose

The purpose of this document is to provide a high-level overview of planned engagement activities Beca International Consultants Limited (Beca) will be undertaking for the Vanuatu Rapid Climate Risk Assessment project. It documents the organisations to be consulted, contact names, key messages/strategy and our proposed method of engagement.

2 Background

The Secretariat of the Pacific Regional Environmental Programme (SPREP) has engaged the Beca team, consisting of local and international specialists with knowledge in climate risk assessment and stakeholder engagement, to deliver this important project.

Beca will undertake stakeholder consultation with 18 key stakeholders who are made up of organisations that use the RCR framework and those with a connection to the tourism sector, to inform the development of the Rapid Climate Risk Assessment framework and methodology.

This framework will then be tested and deployed through a case study in the Tourism Sector (including infrastructure and fisheries associated with tourism).

3 Key terms

For the avoidance of doubt, we have briefly defined each of the key terms used in this high-level plan below.

Risk: The probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur. In this Project, the term risk is used to refer to the risks of climate-change.

Hazard: Climate-related physical events or trends, and their physical impacts, such as sea level rise or severe weather events.

Impact: Effects on lives, health/wellbeing, ecosystems and infrastructure as a result of realised or potential risks. Impacts can be adverse or beneficial.

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Exposure: The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected by climate change.

4 Engagement Goals

The stakeholder engagement the Beca team will be undertaking is intended to gather input and information from key stakeholders which will be used to support the development of the framework and methodology, case study and financial projections for the tourism sector.

We intend to address the key messages and questions outlined in section 7 of this report and aim to understand each stakeholder's specific needs, what role they will play and how they will contribute to this project.

5 Consultation methodology

We will undertake this consultation through providing the 18 stakeholders identified by SPREP and the Department of Tourism with a brief description of the project and what we are seeking from them.

We will hold virtual consultation sessions with the stakeholders to understand their specific needs, what role they will play and how they will contribute to this project. This engagement will be concentrated into 3 x 2-hour sessions in the interest of accommodating the revised project timeframes.

Our understanding is that feedback and comments from the stakeholders will be gathered and consolidated through the Department of Tourism and communicated to our project team within the stakeholder consultation timeframe to allow for it to be incorporated in our reporting deliverable. Any feedback and commentary not received within the workplan timeframes will not be able to be incorporated.

The information provided during the consultation will be recorded and captured in a Consultation Report to be delivered to the client at the end of the consultation process.

This information will enable the team to identify very early on the level of information and awareness of climate hazards in Vanuatu, particular end user needs for the framework (such as what format may work best for users).

6 Key stakeholders

The following list of organisations have been identified as relevant stakeholders by the SPREP and Department of Tourism:

- SPREP
- Vanuatu Meteorology and Geo-Hazards Department (VMGD)
- Department of Tourism (DoT)
- Vanuatu Tourism Office (VTO)
- Public Works Department (PWD)
- Department of Geology and Mines
- Department of Ports and Harbor
- Vanuatu Chamber of Commerce and Industry
- Reserve Bank of Vanuatu
- Department of Finance and Treasury
- Commonwealth Scientific Industrial Research Organization (CSIRO)
- Department of Climate Change (DoCC)
- National Disaster Management Office (NDMO)
- Department of Environment Protection and Conservation (DEPC)
- Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business
- Vanuatu National Statistics Office (VNSO)
- Vanuatu Fisheries Department (VFD)
- Tropical Agency Limited (TAL)

7 Key messages and questions

The key messages that we want to convey to the stakeholders are:

1. The value in having an accessible climate risk framework that different stakeholders can implement.
 - Create comparative analysis and cooperation during decision-making processes.
2. The benefits of employing a standard framework to consistently evaluate climate risks.
3. The ability to identify priority risk areas for more detailed assessment and future entry point adaptation actions.
4. The impact of the frameworks' guidance on financial projections mechanisms for future strategy and investment.

Our approach to the stakeholder engagement is that we want to understand the relevant stakeholder needs and who the end user of this tool will be to develop an accessible framework, which can provide a consistent way to assess climate risk across the different sectors.

Key questions to the stakeholder groups will include:

- What are your core activities?
- Where do you operate within Vanuatu (critical locations/infrastructure, key activities, people)?
- Can you share any specific climate-related challenges, or risks that you have encountered in your sector? (With a specific lens on Tourism)
- What information do you already have about climate risk and vulnerabilities within your sector?
- What experience do you have with using risk frameworks?
- How could this climate risk framework be valuable to support your activities?
- What is the most useful format to you for making risk assessment decisions (do you have ready access to Microsoft excel)?
- What could prevent you from using this framework and methodology?

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Appendix A - Register of stakeholders

Agency/ organisation	Stakeholder Group	Name of key contact	Title / role	Email/ Contact number
SPREP	All	TBC by DoT/SPREP		
Department of Tourism (DoT)	Tousism	Paul Pio	Director of Tourism	ppio@vanuatu.gov.vu (678) 33 400
The Vanuatu Tourism Office (VTO)	Tourism	Adela Issachar Aru	CEO	aissachararu@vanuatu.travel
The Department of Ports and Harbour	All	Kembro Manderson		kmanderson@vanuatu.gov.vu
Vanuatu Meteorology and Geo-Hazards Department (VMGD)	All	Junior Niroa		jjniroa@vanuatu.gov.vu
Public Works Department (PWD)	Tourism and fisheries	Andre Iatipu	Deputy Director	pwdheadoffice@vanuatu.gov.vu +678 33460 or +678 22790
The Department of Geology and Mines	All	Michel Leodoro	Geoscientist	mleodoro@vanuatu.gov.vu
the Vanuatu Chamber of Commerce and Industry	Tourism and fisheries	Joanna Spencer	Advisor	advisor@vcci.vu + 678 27543
The Reserve Bank of Vanuatu	Tourism and fisheries	Robert Peter	Senior Economist	(+678) 23333 rpeter@rbv.gov.vu
The Department of Finance and Treasury	Tourism and fisheries	Henderson Tagaro	Deputy Director	htagaro@vanuatu.gov.vu
Commonwealth Scientific Industrial Research Organization (CSIRO)	All	TBC by DoT/SPREP		
Department of Climate Change (DoCC)	Tourism and fisheries	Jerry Timothy	Manager, Climate Services	jerryt@vanuatu.gov.vu
National Disaster Management Office (NDMO)	Tourism and fisheries	Abraham Nasak	Director	anasak@vanuatu.gov.vu
Department of Environment Protection and Conservation (DEPC)	Fisheries	Rolenas Bareleo or Dean Wotlolan		r.tavue@gmail.com OR deanwotlolan@gmail.com
Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business	Tourism	Jack Lowane	Policy Coordinator	jlowane@vanuatu.gov.vu
Vanuatu National Statistics Office (VNSO)	All	Benuel Lenge	Chief Statisticain	blenge@vanuatu.gov.vu
Vanuatu Fisheries Department (VFD)	Fisheries	June Brian Molitaviti		jbmolitaviti@fisheries.gov.vu
Tropical Agency Limited [TAL]	Tourism	Mark Pardoe	Managing Director	mark@tal.vu OR (678) 22205

B

Appendix B – Work Plan

Task	Due date	September			October					November				December			
		11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25
Phase 1																	
Commencement	14/09/2023																
Inception meeting (virtual)	26/09/2023																
Submission of Draft Inception meeting report	9/10/2023																
Client review of draft inception meeting report	16/10/2023																
Deliverable 1	Submission Final Inception meeting report	23/10/2023															
	Invoice - Inception Meeting report including approved work-plan	23/10/2023															
	Approx [14] virtual stakeholder consultations																
	Draft Stakeholder consultation report - scope / needs / roles identified	3/11/2023															
	Client review of stakeholder consultation report	17/11/2023															
Deliverable 2	Acceptance of Final Stakeholder consultation report - scope / needs / roles identified	24/11/2023															
	Invoice - Final Stakeholders' consultation Report including scope, needs and roles clearly identified	24/11/2023															
	Draft Climate risk assessment framework and methodology (up to 30 pages).	17/11/2023															
	Present the draft Rapid Climate Risk Assessment Framework and Methodology to SPREP, VMGD, DoT and project stakeholders.	TBC (Week of 20 November 2023)															
	Client review of Climate risk assessment framework and methodology	1/12/2023															
Deliverable 3	Final/ Client acceptance of Climate risk assessment framework and methodology	8/12/2023															
	Invoice - Final Rapid Climate Risk Assessment Framework and methodology	8/12/2023															
	Send out stakeholder workshop invitations																
	Undertake 3 x 3-hour stakeholder workshops virtual (1 for Tourism, 1 for Fisheries and 1 for Infrastructure)	TBC (23 October to 1 November 2023)															
	DRAFT Apply case Study for Tourism and associated infrastructure and fisheries in Vanuatu (up to 20 pages).	17/11/2023															
	Client Review of Case Study for Tourism and associated infrastructure and fisheries in Vanuatu	1/12/2023															
Deliverable 4	Final/ Client acceptance of Case Study for Tourism and associated infrastructure and fisheries in Vanuatu	8/12/2023															
	Invoice - Final Applied Case Study for Tourism and as-sociated infrastructure and fish-eries in Vanuatu	8/12/2023															
	Draft Financial Projections Mechanism for Tourism Investments	24/11/2023															
	Client review of Financial Projections Mechanism for Tourism Investments	1/12/2023															
Deliverable 5	Final/Client acceptance of Financial Projections Mechanism for Tourism Investments	8/12/2023															
	Invoice - Financial protection mechanism to assist in the development standard costs anal-ysis for tourism investments.	8/12/2023															

C

Appendix C – Inception Meeting Minutes and Presentation

Vanuatu Rapid Climate Risk Assessment Framework Inception meeting minutes

Held 4th October at 11.30am NZDT (9.30am VUT)

Teams Meeting

Attendees:

- Sunny Seuseu - SPREP
- Geraldine Tari Natu – Vanuatu Department of Tourism (DEPARTMENT OF TOURISM)
- Geoff Gooley - CSIRO
- Rebecca Gregory - CSIRO
- Hannington Alatoa - On-Island Consultant
- Cushla Loomb – Beca Project Director
- Kristin Renoux – Beca Project Lead
- Mike Allis – Beca Climate Science Expert
- Carlos Carvajal – Beca Climate Scientist

Part 1 – Welcome and Background

Item	Action
<p>1. Key Project Objectives</p> <ul style="list-style-type: none"> • Team introductions • Awareness of: <ul style="list-style-type: none"> – Deadline for the project Phase 1 is 10th of December – Phase 2 is dependent on an extension decision by end of the year • Demonstrate how the information produced by SCIRO can be embedded within the Tourism case study • Confirm that the Rapid Climate Risk Assessment Framework (RCRAF) methodology will use the information already available and ensure that the framework will usable by broader sectors • Clarify that the nature of the RCRAF is one that allows non-technical people within the government agencies to be able to do a quick assessment across their relevant sector and highlight the prospect of future detailed planning 	<ul style="list-style-type: none"> • SPREP to ensure that stakeholders are aware of project kick-off and deadlines, as their needed involvement is critical. • SPREP and Department of Tourism to confirm stakeholder list with 1-2 representatives • Department of Tourism to send a notification memo to start the stakeholder engagement

2. Key Deliverables and Workplan

There are 5 project deliverables

1. Inception meeting and inception meeting report
 2. Stakeholder consultation and report
 3. Rapid Climate Risk Framework Methodology report
 4. Tourism sector case study report
 5. Financial projection mechanism report
- All these deliverables need to be “usable and used” by the people of Vanuatu to provide insight into risks and opportunities in different sector context
 - The rapid framework is one that is easily applicable and intentionally high level
 - There is no National Adaptation Plan for Vanuatu [Outside current scope]
 - Gap: no method for a standard risk assessment factor of exposure and vulnerability [Outside current scope]
 - CSIRO has data regarding case studies and tools that guide sectors.
 - CSIRO and VanKIRAP provides the portal to see the climate information

- Inception report to be delivered by the 9/10 depending on information delivery. (BECA)
- Coordinate a meeting with CSIRO (Geoff, Rebecca, Liam, Nathan) through SPREP (1 hr)

3. Stakeholder Consultation

- Who are the stakeholders and the key contacts?
- 18 stakeholders identified so far
- Other stakeholders that may be worth adding:
 - GIZ consultancy is working on national vulnerability assessment.
 - Save the Children has a project about risk assessment and could be a key framework user. This stakeholder is under the Department of Climate Change
- The shortened project timeframe requires a condensed consultation process (3x multi-stakeholder meetings to replace 14x individual stakeholder meetings).

- SPREP and Department of Tourism to confirm list of stakeholders and provide 1 or 2 key contacts
- Department of Tourism (Geraldine) to start engaging with list of stakeholders with a memo to notify about the upcoming consultation
- SPREP to confirm GIZ's involvement and national vulnerability assessment development. SPREP to find the timeline and scope of project.
- Beca will coordinate consultation material and create a virtual meeting program to engage with stakeholders (time slot format)

4. Information Gaps

- Information review from VanKIRAP. Will a compilation of all the data be available to Beca? Geoff (CSIRO) confirmed yes.
- Fluvial flooding data is not available because it is under preparation with NIWA. The final report was due at the end of September. It should be out in the next few weeks. For Santo, it would be the Cara catchment, and for Efato would be Malae catchment (a combination of 3 rivers)
- VanKIRAP 3.0 to get published in November which is the last contractual commitment of CSIRO with SPREP. However, CSIRO is happy to share information before uploading version 3.0.
- Beca noted that the project timeline cannot wait for additional NIWA and CSIRO outputs and will proceed with the information available at project commencement (10 October).
- CSIRO team to coordinate data transfer with Beca in the next meeting
- Department of Tourism will facilitate data information requests and provide information as per the due date.

Part 2 - Administration, Project Management, reporting and invoicing

Item	Action
<p>1. Project reporting and invoicing</p> <ul style="list-style-type: none"> • 5 Deliverables with 5 payments. As soon as the deliverable is clear with Department of Tourism, then invoice needs to be sent and SPREP authorises the payment. • Department of Tourism is the organisation providing the review. SPREP will combine the comments from Department of Tourism and SPREP as prescribed with deadlines 	<ul style="list-style-type: none"> • Beca will provide a fortnightly update that will include: up-to-date workplan, challenges, and budget update. If needed a meeting could be scheduled.
<p>2. Project Risks</p> <ul style="list-style-type: none"> • Consultation will be led by Department of Tourism and facilitated with SPREP. Both are aware of the time constraint. • SPREP confirms that no comment equates to the assumption of approval by Department of Tourism. • Consultation needs to happen with the next couple of weeks for the project to remain on programme. • Consultation to be set up in time slots where stakeholders would sign in and provide input. • Delays due to information availability. In that eventuality, Beca will inform SPREP about the information gaps the implications of the gaps, and mitigate by progressing by making certain assumptions. SPREP approved of that approach and asked to note of those assumptions in the methodology. • No other anticipated delays from SPREP or Government, just keeping informed about political status 	
<p>3. Other Business</p> <p>None</p>	

Minutes by: Carlos Carvajal



Vanuatu Rapid Climate Risk Framework Inception Meeting

4 October 2023

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Meeting Agenda - Part 1

1. Introductions
2. Objective of the meeting
3. Timelines and deliverables
4. Questions and answers





Introductions

Beca Project Team



Cushla Lomb
Project Verifier



Kristin Renoux
Project Lead



Hannington Alatoa
On-island Consultation



Mike Allis
Climate Science
Expert



Carlos Carvajal
Climate Scientist



Sophie Andrews
Project Support



Kayla Baker
Project Support



Jerry Khoo
Financial Lead



Key Project Objectives

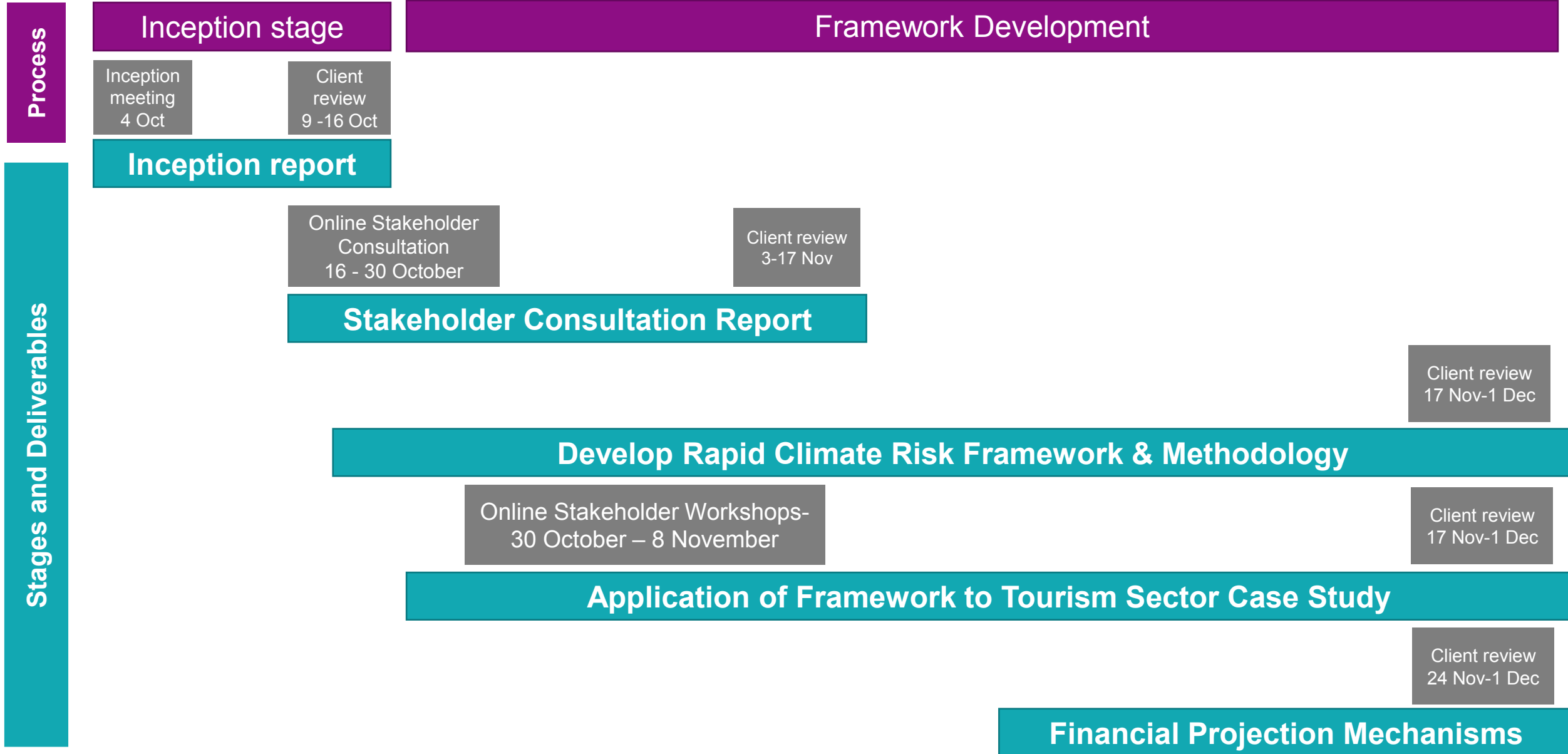


Key Deliverables and Milestones

Project Overview – Workplan

October

November





Stakeholder consultation

Identified Stakeholders

1. SPREP
2. Department of Tourism (DoT)
3. The Vanuatu Tourism Office (VTO)
4. The Department of Ports and Harbour
5. Vanuatu Meteorology and Geo-Hazards Department (VMGD)
6. Public Works Department (PWD)
7. The Department of Geology and Mines
8. the Vanuatu Chamber of Commerce and Industry
9. The Reserve Bank of Vanuatu
10. The Department of Finance and Treasury
11. Commonwealth Scientific Industrial Research Organization (CSIRO)
12. Department of Climate Change (DoCC)
13. National Disaster Management Office (NDMO)
14. Department of Environment Protection and Conservation (DEPC)



Information Gaps

Information Request

- Key Contact Information per organisation
- Purpose: Tool Framework Development
 - Climate and Hazard data (Historical data ends in 2000-2005):
 - Daily rainfall, temperature, wind, sunshine data
 - Drought and freshwater availability
 - Marine ecology survey data/monitoring data national + local
 - Storms historical records
 - Seismic historical records
 - ENSO historical records
 - Coral bleaching records

Information Request

- Purpose: Tourism Case Study
 - Sector contribution to national GDP and economic sector breakdown
 - Storm recovery spending invested in the sector
 - Future projected spending (long-term plan)
 - Fisheries statistics and logistics information
 - Infrastructure assets information (capital and operational costs)
 - Location of assets
 - Transport infrastructure
 - Hospitality
 - Food
 - Recreation
 - Ports
 - Electricity and network infrastructure
 - Any government (national or local) engagement/survey



Q + A

Meeting Agenda Part 2

1. Project reporting / Invoicing
2. Project Risks
3. Other Business





Project reporting / Invoicing



Project Risks



Other Business





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