

**GCCA+ SUPA OUTPUT 1**

# **PLANNING FRAMEWORK AND SCHEDULE FOR THE PREPARATION OF THE IMPACT METHODOLOGY**

**30.09.21**

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## Definitions

### ADAPTATION

The process of adjustment to actual or expected changes and their effects. In human systems, adaptation seeks to moderate or avoid harm and exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects<sup>1</sup>.

### ASSET

An item of property that provides a current, future or potential economic benefit for an individual or other entity.

### BENEFICIARIES

People who have received an input of support from an activity or programme.

### COPING CAPACITY<sup>2</sup>

The ability of people, organizations and systems, to use available skills and resources, to manage adverse conditions, risk or disasters.

### EFFECTIVENESS

In project management this refers to the extent to which the project's results were attained, and the project's specific objectives achieved.

### IMPACT

The measurable or observable effect or influence something has on a situation or person.

### INDEX

The aggregated average of each of the characteristics to give an overall measure.

### INDICATOR

A specific, observable and measurable characteristic that can be used to show changes or progress a programme is making toward achieving a specific objective.

### NATURAL ASSETS

Consist of biological assets (produced or wild), land and water areas with their ecosystems, subsoil assets and air.

### OUTCOME

The medium-term result or consequence of an action, situation or event.

### QUANTITATIVE

Measured by the quantity of something rather than its quality.

### QUALITATIVE

Relating to or measured by the quality of something rather than its quantity i.e. description of an event, activity, observation or experience.

<sup>1</sup> IPCC, 2014: Annex II: Glossary [Mach, K.J., S. Planton and C. {WGII, III}]

<sup>2</sup> [www.preventionweb.net](http://www.preventionweb.net)

# 1. Introduction

The Global Climate Change Alliance Plus Scaling up Pacific Adaptation (GCCA+ SUPA) is about scaling up climate change adaptation measures in specific sectors supported by knowledge management and capacity building. The 4.5-year project (2019-2023) is funded with € 14.89 million from the European Union (EU) and implemented by the Pacific Community (SPC) in partnership with the Secretariat of the Pacific Regional Environment Programme (SPREP) and The University of the South Pacific (USP), in collaboration with the governments and peoples of Cook Islands, Federated States of Micronesia (FSM), Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Tonga and Tuvalu.

Specifically, the GCCA+SUPA project is about strengthening the implementation of sector-based, integrated climate change and disaster risk management strategies and plans.

The project is being delivered in a coordinated and integrated manner supported by the three implementing organisations, utilising a people-centred approach and involving men, women, elders, youth, persons with disabilities and other vulnerable groups.

GCCA+ SUPA collaborates closely with other programmes and projects in the region, seeking synergies where possible with delivering shared outcomes that contribute to the Framework for Resilient Development in the Pacific: An Integrated Approach to Address Climate Change and Disaster Risk Reduction (FRDP), the Paris Agreement to the United Nations Framework Convention on Climate Change, the Sendai Framework for Disaster Risk Reduction and the Sustainable Development Goals.

GCCA+ SUPA is one overall action with three key outputs, each delivered by a regional partner working in a collaborative manner.

**Output 1.** SPREP: Strengthen strategic planning at national levels. An impact methodology designed to assess past adaptation interventions and is being tested in four countries.

**Output 2.** USP: Enhance the capacity of sub-national government stakeholders to build resilient communities.

**Output 3.** SPC: Scale up resilient development measures in specific sectors (food security, water security, human health, coastal protection and marine resources).

Climate change, including natural disasters, remains the single most important priority for Pacific smaller island states. Building on the approach taken by the GCCA: Pacific Small Island States project (GCCA: PSIS) and learning from the past, the GCCA+ SUPA Action focuses on scaling up adaptation activities in specific sectors supported by knowledge management and capacity building.

This paper focuses particularly on Output 1: Climate and disaster risk information, knowledge management, monitoring and strategic planning capacities strengthened at national and regional levels.

Learning from the last, this output focuses particularly on supporting national decision making such that new climate change adaptation interventions are designed and implemented with sustainability at the forefront of the process. In close collaboration with selected trial countries with a history of adaptation and a sound level of adaptive capacity, a draft impact methodology is being field tested. Once the impact methodology is complete, it will be shared with all ten countries together with the results of the trials, and a final version prepared. A user-friendly database is planned to help countries implement and store results data of their impact assessments.

A key for improved decision making is the ability to track the performance of adaptation actions and to measure the outcomes. Figure 1 shows the schedule for preparation of the impact assessment methodology.

The first stage is the literature research and to prepare an outline for the methodology including the key criteria. A detailed review of adaptation interventions in the project's ten countries was conducted and expressions of interest were solicited to participate in the trial of the methodology. Four trial countries were selected, interventions for assessment selected and local consultants recruited.

The second stage was to prepare indicators and checklists for data collection relating to the impact of the completed interventions. The data are now being compiled, analysed and summarised.

The third stage consists of relating the assessment results to the criteria for the impact assessment methodology. The goal of this stage is to refine the criteria for the impact assessment methodology and support the methodology with simple indicators and checklists.

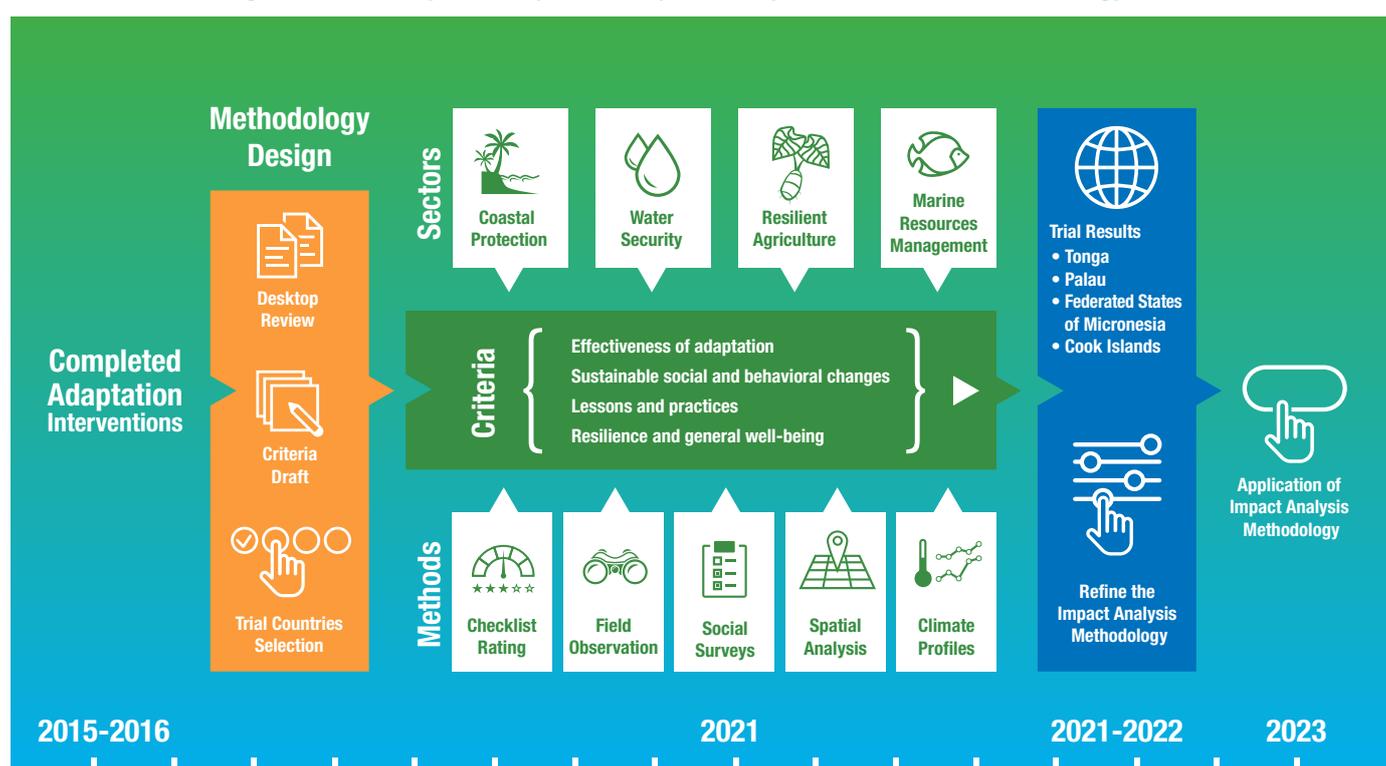
The fourth stage is to share the methodology with partner countries and finalise the methodology.

Figure 2 presents a graphic showing the project schedule.

Figure 1. Schedule for Output 1 of an Impact Assessment Methodology

A. REVIEW AND OUTLINE OF IMPACT ASSESSMENT FRAMEWORK METHODOLOGY	2020	2021	2022	2023
1.1. Background review and literature analysis				
1.2. Review of CCA adaptation in SUPA countries				
1.3. Development of criteria for impact assessment framework methodology				
1.4. Selection of countries, sectors and projects to assess				
1.5. Recruitment of country officers (4)				
B. DATA COLLECTION & COMPILATION FROM 4 TRIAL COUNTRIES	2020	2021	2022	2023
2.1. Design indicators for each sector				
2.2. Collect country data for each sector				
2.3. Compile and analyse country data				
2.4. Prepare summary of assessment results for each intervention				
C. DATA ANALYSIS & PREPARATION OF FULL METHODOLOGY	2020	2021	2022	2023
3.1 Compare assessment results with end-of-project M&E reports for each intervention in the trial countries				
3.2. Refine the criteria for the impact assessment methodology, supported by simple and user-friendly indicators and checklists for target audiences and practitioners				
D. FINALISATION AND SHARING	2020	2021	2022	2023
4.1. Share the impact assessment methodology with partners and countries, and prepare a final version				
4.2. Develop a portal to archive the impact assessments				

Figure 2. Pathway for Adaptation Impact Analysis Framework Methodology in the Pacific Context



## 2. Preparation of the Draft Impact Assessment Framework Methodology

### 2.1 Purpose and Target Audience

The objective is to develop a framework for examining the residual impacts of climate change adaptation interventions, so as, to promote best practices in climate change adaptation in small island states in the Pacific.

This methodology is not intended as a universal, worldwide framework although aspects may be relevant for other developing countries.

The methodology is a framework intended as a relatively simple mechanism for use by future practitioners to aid them in planning climate change adaptation interventions. Notwithstanding the above, development of the framework has been based on significant and detailed data collection and analysis in the trial countries.

The purpose of the impact assessment methodology is to inform target groups about best practices and to promote more effective and sustainable interventions in the future.

The target groups are policy makers, disaster risk reduction managers, public health-development practitioners, budget planners in national and local authorities, regional organizations, locally based and international non-government organizations, interest groups in the public-private sector.

The time frame to develop, test and communicate this impact assessment to the target countries is from mid-2020 to mid-2023.

### 2.2 Criteria for the Impact Methodology Framework

This methodology framework is to provide guidance on how to objectively assess the impact of completed adaptation interventions and identify those aspects that can be replicated and scaled up. Whilst trying to maintain an objective focus there will inevitably be some aspects of subjectivity.

To be comprehensive yet tailored to the localized conditions where these interventions were established, an analysis of the impact of the adaptation effort will include the physical, ecological and human elements. The data and indicators to capture the changes and impacts resulting from the adaptation interventions will be location-specific and time-sensitive. Inevitably, data limitations, resourcing limitations and scientific uncertainty, together with the inherent variability of stakeholder perceptions, will result in further uncertainty.

Based on the foregoing any impact assessment may only provide a partial picture for a particular intervention. But it can still provide important information in the development field for best practices to promote more effective and sustainable interventions in the future.

Four sets of criteria have been developed:

**(i) Effectiveness.** This refers to the extent to which the project's results were attained, and the project's specific objectives achieved. It requires an examination of the documents relating to the design and implementation of the specific intervention, including its scope, funding, objectives, purpose, time frame and effort expended.

**(ii) Sustainable social and behavioural changes.** The set of criteria includes the theory of change and particularly the triggers for how, why and when the human behaviours changed. These are best examined through a medium to long term framework such as an impact assessment designed to test theory of change and assumptions made then during the life of project. The theory of change enables stakeholders to embed an intervention within a larger strategy and broad, transformative analysis (Stein and Valters, 2012:5), such that it articulates a vision of meaningful social change, with specific steps or actions mapped. For example, the Palau experience kickstarted with setting a pathway to achieving community resiliency, focused on its country priorities and on which achievements can be measured. This is also an iterative process such that unintended outcomes from the interventions reflect the emerging conditions and new knowledge acquired, the social background and interactions between the stakeholders benefitting from the intervention.

**(iii) Successful lessons and practices.** These criteria group any successful aspect of the intervention. They might include how vulnerable groups, such as persons with disabilities, the elderly, women, youth or migrants have been involved or had their livelihood improved by the intervention. Alternatively new technology that improved beneficiaries coping strategies might be among the successful practices.

**(iv) Overall sustainability of the completed climate change adaptation interventions.** If a structural measure was part of the intervention, this would include whether the measure is still intact, the extent to which it has or has not

been maintained, and whether natural assets were enhanced or damaged. Alternatively, if the intervention focused on capacity building, then this would include the extent to

which the new skills have been applied, or in the case of an educational activity, whether the skills have been incorporated into the curriculum.

## 2.3 Desktop Review of Completed Adaptation Interventions

Impact assessment of climate change adaptation interventions several years after their completion is a major gap in the Pacific countries. The standard end-of-project evaluations, focus almost entirely on outputs and are usually conducted around the project end-date. For climate change adaptation, there is no single metric nor a generalizable approach that measures the impact of interventions. In trying to assemble data to inform the development of an impact assessment methodology, it is noted that most climate change impact interventions are location specific.

Pacific countries need an objective impact assessment methodology for past interventions that shifts their planning horizons from the short-term project approach to the medium term (10+ years) sector resilient approach.

In utilising an information and knowledge management approach, the design of an impact assessment methodology from past lessons requires examination of a spectrum of adaptation interventions noting that different interventions may need different methodologies.

A few broad questions guided the desk review (key reference documents are listed in Annex 1):

- Where have projects been implemented?
- What actions have been conducted by listed projects?

- What adaptation outcomes were these listed projects seeking to achieve?
- How have the impacts of projects been measured and evaluated?
- What set of indicators that can capture the impact of the adaptation actions were implemented by projects?

These informed the profiling exercise to identify and assess available information, which was complemented with relevant knowledge and learning from in-country personnel and regional contacts.

Table 1 outlines the adaptation history of projects completed in the last five to six years and the sector priorities for the ten countries involved in the GCCA+ SUPA project. The most prominent climate change sector focus was on water availability for benefiting communities. According to the latest key findings from the IPCC Sixth Assessment Report (AR6) on the physical science stated that although the Pacific will become wetter, fresh-water availability will decline due to saltwater intrusion from sea level rise. For instance, there is a 20% decline in groundwater availability projected in Federated States of Micronesia (FSM) by 2050.

COUNTRY	FOCAL SECTORS BY PROJECTS							
	Freshwater Security Conservation	Marine Resources	Water catchment management	Coastal Management Protection	Public Health	Food Security	Livelihoods	Institutional strengthening
Cook Islands								
Federated States of Micronesia	V+ T4 T5			V T4	T4	T4		*
Fiji				+		V		*
Kiribati*	+				X			*
Marshall Islands	V			V	+			*
Nauru	V+				V			*
Niue	V+							
Palau*	+			V	+	T6V T2	T6 T2	†*
Tonga*	V			P+ T1 T2				
Tuvalu	V+			X		V X	X	

### KEY on projects:

V	PACC	Pacific Adaptation to Climate Change Project: 2009-2015
P	PACC+	Pacific Adaptation to Climate Change Project: 2014-2015
	GCCA PSIS	GCCA Pacific Small Island States Project: 2011-2016 [Case studies*]
X	GEF NAPA	National Adaptation Programme of Action. Available for Kiribati and Tuvalu
+	GCCA SUPA	Scaling Up Adaptation in the Pacific
*	ISACC	Institutional Strengthening in Pacific Island Countries to Adapt to Climate Change.
T1	CRSP	Not available to Cook Islands and Niue Climate Resilience Sector Project, 2014-2019. Not available to Niue. (funded by the Climate Investment Fund/CIF & implemented by ADB)
T2	ACSE	Adaptation to Climate Change and Sustainable Energy, 2016-2020 (EU-GIZ funded project)
T3	UNDP GEF	Ridge to Reef
T4	AF	Adaptation Fund
T5	RENI	North Pacific-Readiness for El Nino
T6	GEF SGP	Global Environment Facility, Small Grants Programme

Table 1. Key Regional Completed Adaptation Projects in the Countries covered by GCCA+ SUPA

(Countries in orange expressed initial interest in the profiling of adaptation interventions).

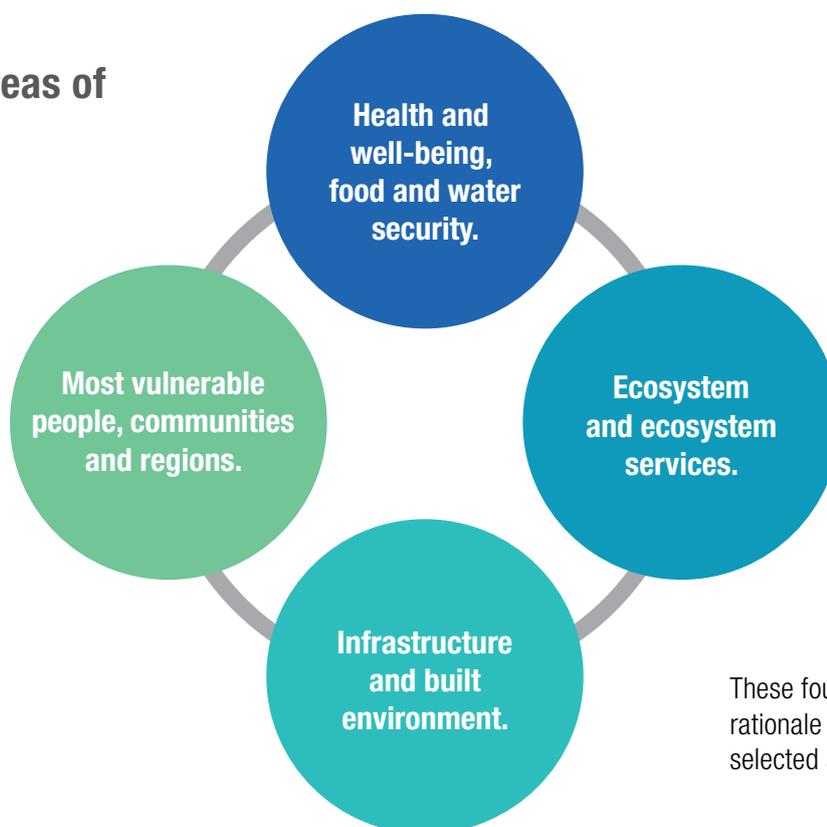
Tracking adaptation history at the country level helps identify key sectors and understand the efficiency of assigned resources. However, there are limitations to adaptation tracking and measurement which include the ambiguity of the concept of adaptation per se and the lack of comparable, aggregated metrics (Ford and Berrang-Ford 2015, Magnan 2016, Tompkins et al 2018).

Insufficient comparable data sources from archived project files make it difficult to develop robust approaches to measure the effectiveness of implemented interventions; or trace the interventions back to overarching policies and plans; or provide credible scenarios of successful adaptation (Olazabal et al. 2019).

Prior to tracking adaptation actions, a reference baseline is needed to stocktake what is occurring on the ground (Tompkins et al 2018) so that future efforts of tracking can be adequately sized and compared. National Communications to the United Nations have been analysed to understand national adaptation progress (Lesnikowski et al). Very few known studies in the Pacific context have delivered more comprehensive analyses covering different scales.

Based on the desktop review of Pacific adaptation projects, four main adaptation areas emerged, see graphic below:

### Key result areas of adaptation:



These four areas provided the rationale for which indicators were selected and feedback sought.

## 3. Trialling the Draft Impact Assessment Framework Methodology

Based on the desktop review, consultations with countries and expressions of interest, four trial countries were selected: FSM and Palau in the North Pacific and Cook Islands and Tonga in the South Pacific.

National consultants were engaged in each of the four countries to assist with the transfer of knowledge, information sharing, data collection and analysis.

The selection of the adaptation interventions for the trial was conducted in close collaboration with the national government agency responsible for climate change and this collaboration continued throughout the data collection and analysis phases.

### 3.1 Project Selection

Three categories of data were accessed during the profiling and data search:

- Archived project reports.
- Accessible online journals and publications, country reports, and reports published by regional and international organisations such as ADB, World Bank, WHO, FAO, SPC, SPREP, GEF, GCF, AF.
- Informal information sources such as personal communications from persons involved in the project implementation.

The data accessed included, but were not limited to:

- Field assessment surveys, feasibility, and vulnerability assessments.
- Spatial distribution data
- Historical climate profiles from stations near to project sites.
- Data disaggregated by gender.
- Social demographic information
- Local area data.

The projects selected for the trialling of the methodology are shown below in Table 2.

Table 2. Projects selected for the Trial Assessment

COUNTRY	TITLE OF PROJECT AND SELECT INTERVENTION	FUNDING AGENCY	SECTOR	YEAR PROJECT WAS COMPLETED
Tonga	GCCA PSIS: Trialling Coastal protection measures in Eastern Tongatapu.	EU GCCA	Coastal protection	2015
Palau	PACC: Salt tolerant taro varieties utilized in taro patches affected by saltwater intrusion.	GEF and the Australian Government	Resilient agriculture	2014
Federated States of Micronesia	RENI: Community rainwater catchments refurbished and replaced in Kapingamarangi, Pohnpei.	EU	Water security	RENI: 2019
	AF: Repair and install household/communal water tanks at Kapingamarangi.	Adaptation Fund, AF		AF: 2018-current
Cook Islands	R2R: Mangaia ra'ui marine protected areas, Pa Enea.	UNDP GEF	Marine resources management	2018

The desktop review, the selection of projects and the collection of data were conducted over the period October 2020 to June 2021. (It should be noted that Tonga and Palau were progressed first, followed by Cook Islands and FSM).

## 3.2 Indicators and Checklists

The indicators and sub-indicators for a spectrum of adaptation interventions were selected based on the following criteria:

- Selected from a standard listing of indicators used by multilateral donors like Green Climate Fund (GCF), Global Environment Facility (GEF) and Adaptation Fund (AF).
- Scalable over the entire scale of interest. Applicable to country level or subnational and localized level.
- Cover the different biophysical conditions, geographical, habitat and climatic types e.g. terrestrial, coastal, marine, atoll, high/low volcanic islands.
- Unbiased and easy to apply with well-defined measurements and limits.
- Availability of relevant baseline data.

It was recognised that some indicators may become redundant after analysis.

The indicators are varied in nature. With the use of a checklist structure to conduct a first level impact assessment there are several caveats which concern the validity of the assessment results. Some responses were qualitative and took the form of 'yes' or 'no' answers or graded from 'none' to 'some' to 'a large amount'. In other cases, numerical data were available which could have been used in their raw state. But even for the numerical data, scales were heterogeneous occurring on a sliding linear or non-linear scale or having different maximum and minimum values. To deal with this heterogeneity, it was decided to map the possible responses to each indicator on a simple scale to allow for a reasonable amount of spread among the possible values of the data.

Annex 2 presents the indicators designed for three of the four sectors: coastal protection, resilient agriculture and water security and their scale of effectiveness ranging from "not effective" to "fully effective". Cook Islands will focus on the marine resources management sector, which is currently being profiled.

Annex 3 presents on the impact checklist form utilised at the field application in trial countries. The two sample checklist forms presented here are for coastal protection and water security measures.

## 3.3 Summary of Indicator Results for each Intervention

Once the indicators have been fully assessed for each completed intervention they will be compiled and analysed.

Table 3. Example Table format for Analysis of the Coastal Protection Indicators

For a particular intervention, each indicator will be written as a positive statement and the average rating calculated. See the example format for coastal protection interventions in Table 3.

Table 3. Example Table format for Analysis of the Coastal Protection Indicators

INDICATOR	MEAN RATING (NONE/LOW/PARTIAL/MODERATE/FULLY)	COMMENTS
1. Effectiveness of the structure to protect the coast.		
2. Improved beach condition.		
3. Community has taken action to protect and conserve the coastline.		
4. Community' perception of safety from coastal hazards increased.		
5. Improved asset value of the coast.		
Statement of the overall impact of the intervention:		

This summary will be accompanied by a short narrative section providing descriptive information about the assessment results.

## 4. Refinement of the Impact Assessment Framework Methodology

The refinement will comprise several analytical steps:

**1. Comparison of impact assessment results with final project documents:** The assessment of each intervention will then be compared with the final reporting that was prepared for the intervention (project) including:

- The objectives and purpose of the project
- The results in the monitoring and evaluation reports
- The results as documented in the final report on the intervention.

Any major contradictions between the final project outputs (as listed above) and the assessment results will be identified and resolved.

**2. Simplifying and reducing the number of indicators:** The overall assessment of each intervention as determined by the trial will be carefully analysed to determine the relevance and usefulness of each indicator. It is expected at this stage that some indicators will be removed possibly because there was insufficient information, or they are judged as not useful.

The indicators and checklists will then be revised, and a simplified list prepared that can be applied by countries in the future.

**3. Revision of the criteria for the impact assessment methodology:** The revised list of indicators will then be related to the four criteria of the impact assessment methodology: (i) effectiveness; (ii) social and behavioural change; (iii) successful lessons and practices; and (iv) overall sustainability. The outcome of this step is expected to be a revision of the criteria for the impact assessment methodology.

It is anticipated that steps 2 and 3 will be executed in conjunction with each other.

The overall product of the refinement will be well defined criteria for the impact assessment methodology for completed adaptation interventions in Pacific small islands, supported by indicators and simple checklists for different sectors.

It is recognised that this methodology does not take account of the overall cost of the intervention.

## 5. Sharing and Finalising the Impact Assessment Methodology with Project Countries

It is anticipated that this process will be completed during the second half of 2022 and into 2023, and the impact assessment methodology will be finalised.

If time permits a portal for the storing of impact assessments will be prepared.

## Annex 1. Key Reference documents

1. Australian and New Zealand and Conservation Council, State of the Environment Reporting Task Force (2000). Core environmental indicators for reporting on the state of the environment. Environment Australia, Canberra.
2. Bours, D., McGinn, C., and Pringle, P. (2014). The Theory of Change approach to climate change adaptation programming. SEA Change CoP, Phnom Penh and UKCIP, Oxford.
3. Coleman-Jensen, A., et al. (2019). Household Food Security in the United States in 2018. U.S. Department of Agriculture Economic Research Service. Available online at: <https://www.ers.usda.gov/webdocs/publications/94849/err-270.pdf?v=963.1>
4. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). (2015). Impact evaluation guidebook for climate change adaptation projects. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. [https://www.adaptationcommunity.net/?wpfb\\_dl=260](https://www.adaptationcommunity.net/?wpfb_dl=260)
5. Donatti, C.I., Harvey, C.A., Hole, D. et al. Indicators to measure the climate change adaptation outcomes of ecosystem-based adaptation. *Climatic Change* 158, 413–433 (2020). <https://doi.org/10.1007/s10584-019-02565-9>
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12. O'Flynn, M. (2012). Theory of Change. What's it all about? Ontrac: The newsletter of intrac. International NGO Training and Research Centre (INTRAC). Available from: [www.seachangecop.org/node/566](http://www.seachangecop.org/node/566).
13. Olazabal, M., Gopegui, M., Tompkins, E., Venner, K., and Smith, R. *Environ. Res. Lett.* 14 (2019) 124056
14. Mcleod, E., Adams, M.B., Forster, J., Franco, C., Gaines, G., Gorong, B., James, R., Kulwaum, G.P., Tara, M., and Terk, E. (2019). Lessons from the Pacific Islands- Adapting to Climate Change by Supporting Social and Ecological Resilience. *Front. Mar. Sci.* 6:289.
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16. Robinson, S. Climate change adaptation in SIDS: A systematic review of the literature pre and post the IPCC Fifth Assessment Report. (May 2020). <https://doi.org/10.1002/wcc.653>
17. Silvestrini, S., Bellino, I., and Vath, S. Impact Evaluation Guidebook for Climate Adaptation Projects. Published by GIZ in cooperation with UNDP; Center for Evaluation CEVAL (2015).

### Web links:

18. <https://www.adaptation-fund.org/wp-content/uploads/2016/04/AF-Core-Indicator-Methodologies.pdf>
19. <https://www.greenclimate.fund/sites/default/files/document/mitigation-adaptation-performance-measurement.pdf>
20. [https://www.unescap.org/sites/default/files/5\\_Sendai\\_Framework\\_for\\_DRR\\_Indicators\\_DRSF\\_3-5Dec19.pdf](https://www.unescap.org/sites/default/files/5_Sendai_Framework_for_DRR_Indicators_DRSF_3-5Dec19.pdf)
21. <https://impactdatabase.eu/explore/>

22. <https://washdata.org/data/household#!/>
23. <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/>.
24. <https://op.europa.eu/en/publication-detail/-/publication/d7d496b5-ad4e-11eb-9767-01aa75ed71a1/language-en/format-PDF/source-206665393>
25. Link to the section on Climate and Atmosphere section in the State of Environment and Conservation in the Pacific region: 2020 Regional report [https://soec.sprep.org/report\\_online.html#atmosphere-and-climate](https://soec.sprep.org/report_online.html#atmosphere-and-climate).
26. Climate Preparedness Score Card <https://library.sprep.org/sites/default/files/2021-03/climate-change-preparedness.pdf>

### **National strategies and reports:**

27. Cook Is State of Environment Report 2018.
28. Fiji Evaluating Ecosystem-based Adaptation for Disaster Risk Reduction in Fiji. Landcare Research. The full report is available from [www.landcareresearch.co.nz](http://www.landcareresearch.co.nz)
29. FSM North Pacific-Readiness for El Nino project. Assessment of project impact: methodology to determine the beneficiaries' viewpoint.
30. GCCA: Pacific Small Island States Individual Country Evaluation Report. May, 2016.
31. Kiribati Joint National Adaptation Plan: 2019-2028
32. GCCA: Pacific Small Island States Case study. SODIS campaign- what it takes to change behaviour.
33. Abaiang Island, Kiribati – A whole of island integrated vulnerability assessment.
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35. Nauru PACC Report of In-country consultations.
36. Pacific Climate Change Finance Assessment. Nauru Case Study. Final Report. May, 2013.
37. Niue PACC Demonstration Guide: Improving domestic rainwater harvesting systems in Niue. Apia, Samoa: SPREP, 2015.
38. Palau Climate Change Policy for Climate and Disaster Resilient Low Emissions Development. 2015.
39. GCCA: Pacific Small Island States Case study. Palau Climate Change Policy- The importance of teamwork. May 2016.
40. GCCA: Pacific Small Island States Individual Country Evaluation Report. May 2016.
41. Tonga Joint National Action Plan 2 on Climate Change and Disaster Risk Management 2018-2028. Monitoring and Evaluation System Guide. Prepared by Department of Climate Change, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (M.E.I.D.E.C.C) in consultation with the JNAP task force and national stakeholders, Tonga. October, 2019.
42. GCCA: Pacific Small Island States Case study. Best practice coastal protection in Tonga. May 2016.
43. EIA report for the project to upgrade wharf for domestic transport. Ministry of Infrastructure. 2015.
44. Climate Resilience Sector Project. Climate proofing of evacuation roads subproject. Environmental Assessment. March 2017.
45. GCCA: Pacific Small Island States Individual Country Evaluation Report. May 2016
46. Rapid Vulnerability and Adaptation assessments of 6 communities in Tongatapu, Ha'apai and Vava'u, Tonga. September & October 2012.
47. Preparation of a Diagnostic study to inform an integrated coastal management plan for Tongatapu.
48. Tuvalu GCCA: Pacific Small Island States Individual Country Evaluation Report. May 2016.

## Annex 2. Table Showing Indicators and Rating Scales

SECTOR	IMPACT INDICATOR	CHECKLIST IMPACT RATING	EXPLANATORY NOTES - OTHER METHODS	LIMITATIONS TO METHODS
			A secondary source of data used to validate findings reported by impact rating in basic Checklist for coastal protection measures.	
<b>Coastal protection</b>	<b>C1.</b> The indicator tracks effectiveness of the structural design built to protect the coast from frequent storm surge, flooding and sea level rise.			
	<p><b>0</b> Not effective (signs of high erosion, community remain impacted, complete structure damage)</p> <p><b>1</b> Low (signs of beach erosion with little beach growth, signs of structure damage).</p> <p><b>2</b> Partial effective (condition of structure is intact, coastline with high eroding signs).</p> <p><b>3</b> Effective (over 50-65% of community feel safe with built protection, structure intact &amp; healthy beach condition).</p> <p><b>4</b> Fully effective (structure remain intact with sign of wear, sand growth healthy beach condition with over 75% of community feel safe and satisfied with structural measure to protect adjacent beachfront).</p>		<p>Use of climate profiles-rainfall, cyclones to ascertain the frequency /intensity of severe weather events that tests the strength of structure built and extent of damage to include non-structural, nature-based measures.</p> <p>Capture people's perspective from tailored social surveys conducted onsite.</p>	
	<b>C2.</b> The indicator tracks the area of beach recharged with sand and beach condition over time pre and after structures were built.			
	<p><b>0</b> No Impact<sup>3</sup> Coastal vegetation, no evidence of human impact, beach wide &amp; convex in profile.</p> <p><b>1</b> Some Impact. Even canopy of coastal vegetation with no gaps; some human impact, beach is wide &amp; convex-up in profile.</p> <p><b>2</b> Moderate Impact. Broken canopy of trees, some regrowth &amp; recruitment, beach is flat in profile, high tide mark close to tree line.</p> <p><b>3</b> Rather High Impact. Tree canopy uneven, signs of sand extraction&amp; vegetation damage, high tide mark is at the top of the beach.</p> <p><b>4</b> High Impact (Degraded). Few trees remain at canopy height; significant disturbance to coastal vegetation, beach profile concave-up, high tide mark is at top of the beach.</p> <p><b>5</b> Severe Impact (Very degraded). Extensive absence of vegetation, beach eroded back to edge of buildings or road &amp; little sand, high tide mark is at top of the beach.</p>		<p>Spatial change detection of coastline over a decade timeline. Information layers to include beach area, land-use patterns including residential. Measure through changes in beach area pre and post construct of the said intervention(s).</p> <p>Beach monitoring data.</p>	

<sup>3</sup> Refer to Coastal Ecosystem-based Rehabilitation Guide. SPREP, 2015 on impact rating.

SECTOR	IMPACT INDICATOR	CHECKLIST IMPACT RATING	EXPLANATORY NOTES - OTHER METHODS	LIMITATIONS TO METHODS
	<b>C3.</b> The indicator aims to ascertain level of community management actions taken to protect the coastline.			
	<p><b>1</b> No actions (structural measure built with government support) beyond project cycle. One replanting activity during the installation of the structure 5 years ago.</p> <p><b>2</b> Moderate (Evidence of structural, non-structural measures initiated by community to protect beach). Notice about local conservation efforts.</p> <p><b>3</b> High (support actions from government, NGOs, community) with a monitoring protocol in place.</p>		<p>Focus group interviews to gain a deeper sense of interest groups' perspective on the influence of said intervention(s).</p> <p>Site observation and completion of basic Impact Checklist.</p>	
	<b>C4.</b> The indicator aims to ascertain level of awareness and community sense of safety with protection of property and land.			
	<p><b>0</b> Somewhat improved (occasional flooding of community area during spring tides or extreme weather, cyclone season).</p> <p><b>1</b> Low awareness and sense of safety. Frequent coastal inundation affecting property, during high tides &amp; stormy conditions; high impact from extreme weather all year round.</p> <p><b>2</b> Moderate awareness and sense of safety with protection of property and land. Occasional flooding of residential/ community area during spring tides, cyclone season)</p> <p><b>3</b> High awareness and sense of safety with protection of property and land. Coast is fully protected with no reported inundation and flooding since build of structural measures.</p> <p><b>4</b> Not safe but only during cyclone season.</p>		<p>Focus group interviews and responses to social surveys will sense of interest groups' perspective on the influence of said intervention(s).</p>	<p>To examine how impact on people can be captured is qualitative.</p>
	<b>C5.</b> The indicator number of assets and asset value tracks investment in coastal protection structural measures.			
			<p>Information extracted from national planning unit/ climate change department.</p>	<p>Asset value does not affect the overall coastal protection except for the investment potential to replicate structural measure(s) elsewhere.</p>

SECTOR	IMPACT INDICATOR	CHECKLIST IMPACT RATING	EXPLANATORY NOTES - OTHER METHODS	LIMITATIONS TO METHODS
			A secondary source of data used to validate findings reported by impact rating in basic Checklist for coastal protection measures.	
<b>Resilient agriculture</b>	<b>A1.</b> The indicator tracks level of increase in food supply sourced locally in correlation to increase in farmers utilizing crop/livestock seed banks.			
	<p><b>1</b> No change in uptake.</p> <p><b>2</b> Slight increase in number of households/ farmers use of seed banks, downscale of farming activities.</p> <p><b>3</b> Significant (over 50% of listed farms issued assistance remain operational. Downscale of farming operations.</p>		<p>Focus group interviews to gain a deeper sense of interest groups' perspective on the influence of said intervention(s).</p> <p>HIES survey information for target areas.</p>	
	<b>A2.</b> The indicator assesses the state of agriculture planning. Distinguishes between integrated planning and subsector planning.			
	<p><b>1</b> Sector plans in preparation.</p> <p><b>2</b> Subsector plan operational with M&amp;E framework.</p> <p><b>3</b> Whole of agriculture sector plan operational with M&amp;E framework.</p>		Focus group interviews.	
	<b>A3.</b> The indicator assesses progress towards an enabling framework for farmers' increased access to technical support /innovation for increased crop/livestock production & yield.			
	<p><b>1</b> No general agreements in place for collaboration.</p> <p><b>2</b> Standard agreements for subsector plan operational.</p> <p><b>3</b> Assistance for subsector operational eg. Subsidies for other agriculture activities.</p>		Focus group interviews.	Evidence maybe qualitative with use of score cards but will require an in-depth analysis to determine the extent of progress; mechanisms/ action plans are needed to track the roll out of any technical support direct to increase crop/livestock production & yield.
	<b>A4.</b> The indicator tracks the soil health practices and areal extent of land under eco-agricultural production e.g. Integrated farming, inter cropping, contour etc.			
	<p><b>1</b> No use of organic fertilizer/sole reliance on inorganic fertilizer.</p> <p><b>2</b> Before planting, apply inorganic fertilizer to enrich the soil. After planting, apply organic fertilizer, use of compost, manure.</p> <p><b>3</b> Full use of organic fertilizer.</p>		Focus group interviews of targeted farmers.	

SECTOR	IMPACT INDICATOR:	CHECKLIST IMPACT RATING	EXPLANATORY NOTES - OTHER METHODS	LIMITATIONS TO METHODS
			A secondary source of data used to validate findings reported by impact rating in basic Checklist for coastal protection measures.	
<b>Water security</b>	<b>W1.</b> The indicator tracks water source and condition as proxy to measuring improved drinking water coverage.			
	<p><b>1</b> Not improved (water supply straight from unprotected dug wells, unprotected spring, cart with small tank/drum, bottled water).</p> <p><b>2</b> Somewhat improved. Increase storage capacity for communal use.</p> <p><b>3</b> Moderately improved. Shared water tanks amongst 3/4 families.</p> <p><b>4</b> Mostly improved. Piped supply to half of the homes.</p> <p><b>5</b> Fully improved. Standpipes built for drinking stations in community and piped water supply to all homes.</p>			
	<b>W2.</b> The indicator assesses the improved state of water facilities and increase in water availability			
	<p><b>1</b> Not improved (water supply straight from unprotected dug wells, unprotected spring, cart with small tank/drum, bottled water).</p> <p><b>2</b> Somewhat improved.</p> <p><b>3</b> Moderately improved.</p> <p><b>4</b> Mostly improved.</p>			
	<b>W3.</b> The indicator tracks level of improvement to existing water harvesting systems.			
	<p><b>1</b> Unimproved (roof needs repair).</p> <p><b>2</b> Moderately Improved (good roof, with screen on tanks).</p> <p><b>3</b> Fully Improved (first flush diverters, screen of tanks).</p>			
	<b>W4.</b> The indicator tracks the capacity to operate and management of the water supply system.			
	<p><b>1</b> Plan developed, neglected state of water system.</p> <p><b>2</b> Plan with a sustainable financing system on how to manage operation, inactive water committee.</p> <p><b>3</b> Plan to include training, water safety, financing repair work.</p>			
	<b>W5.</b> The indicator ascertains if there is improved access to safe water by households, the special needs vulnerable group (disability, elderly, widows, single others) and community.			
	<p><b>1</b> Low (communal water tank/supply, no water committee).</p> <p><b>2</b> Moderate (families of disability, elderly, single mothers have own tanks of water supply, inactive water committee).</p> <p><b>3</b> High (Direct access of piped water into the home of the elderly &amp; disability, fully functioning water committee).</p>			
	<b>W6.</b> The indicator aims to ascertain level of participation, awareness and sense of improved sanitation standard.			

	<p><b>1</b> Low or no participation in water management planning, limited awareness and no improvement in sanitation standard.</p> <p><b>2</b> Moderate (at least half of the participants are women, inclusive of disability persons, with at least 25-50% of respondents seem satisfied with their current sanitation standard).</p> <p><b>3</b> High participation with equal ratio of men/women, inclusive of disability, youth (above 50% of respondents expressed the need to improve sanitation standard now with an increased access to water supply).</p>	
<p><b>W7.</b> The indicator tracks investment in water security measures at one place over time.</p>		

## Annex 3. Sample of Field Checklist Form

BASIC ASSESSMENT FORM: COASTAL PROTECTION MEASURES					
<b>Coastline (N-S orientation)</b>		<b>Country ID:</b>	TON	<b>Location:</b>	Hihifo, Tongatapu
<b>Island/State/Municipality:</b>		<b>Structural type:</b>	Rock Barrier	<b>Name of nearest community:</b>	Ahau
<b>GPS (refer to retrieved map info. available)</b>	Waypoint ID:	<b>Distance to nearest population:</b>	About 100m	<b>Distance of site from nearest river/stream:</b>	N/A
	GPS Start:	<b>Length of coast protected:</b>	About 1km		Inspection date: 08/07/2021 Time starts:
	GPS End:	<b>Tide at time of inspection:</b>	Low		
		<b>Condition of day:</b>	Sunshine		Survey team members:

CHECKLIST	INCREASED PROTECTION	YES	NO	RATING	RATE WHERE RELEVANT
<b>Beach Condition</b> <b>*Source: Coastal Ecosystem-based Rehabilitation Guide. SPREP, 2015.</b>	A healthy beach		<b>1</b>	<b>1</b>	0 - No Impact (Good Condition) Coastal vegetation, even canopy with no gaps; no evidence of human impact, beach wide & convex in profile, high tide mark has sizeable dry beach above it below the vegetation.
	Eroding beach	<b>1</b>		<b>1</b>	1 - Some Impact: sign of collapse on the structure, even canopy of coastal vegetation with no gaps; some human impact.
	Sand removal		<b>1</b>	<b>0</b>	2 - Moderate Impact. Broken canopy of trees, some regrowth & recruitment, vegetation cover - gaps with damage signs of trampling, beach is flat in profile, high tide mark approx.5m in front of beach trees.
	Structures	<b>1</b>		<b>1</b>	3 - Rather High Impact Tree canopy is uneven, majority of area not showing regrowth, some recruitment of small trees, mostly bare sand under the trees; evidence of sand extraction, trampling cause erosion & herb vegetation damage, beach is flat to concave-up i profile, high tide mark is at the top of the beach.

CHECKLIST	INCREASED PROTECTION	YES	NO	RATING	RATE WHERE RELEVANT
	Nearby pig pens.	<b>1</b>		<b>1</b>	4 - High Impact (Degraded), Only a few trees remain at canopy height; significant disturbance to coastal vegetation, large areas of bare sand with footprints at top of the beach; signs of sand mining, pigs digging & garbage; beach profile concave-up with a more vertical section in the upper beach; high tide mark is at top of the beach.
	Nearby use of fertiliser-farming.	<b>1</b>		<b>1</b>	5 - Severe Impact (Very degraded). Extensive absence of vegetation (just isolated trees), no recruitment of trees or shrubs, no vines nor herbs, beach is eroded back to edge of buildings or road & little sand; beach profile concave-up with a cliff/scarp in the upper to lower beach; high tide mark is at top of the beach.
	Signs of beach litter.		<b>1</b>	<b>1</b>	1 - Low (no rubbish), 2 - Moderate (signs of rubbish including disposal of household waste), 3 - High (sign of communal rubbish dumped in the vicinity)
Condition of shore structures	Condition of structures.	<b>1</b>		<b>2</b>	1 - Very good, 2 - Good condition, 3 - Fair condition, 4 - Poor condition
	Signs of sand accumulation.		<b>1</b>	<b>1</b>	1 - Low, 2 - Moderate, 3 - High
	Erosion at vicinity of structures.	<b>1</b>		<b>1</b>	1 - Low, 2 - Moderate, 3 - High
	Effectiveness of the structure (Did it serve its purpose).		<b>1</b>	<b>2</b>	0 - Not effective (signs of high erosion, community remain impacted), 1 - Low (affected by coastal process, condition of structure is intact), 2 - Partial effective (condition of structure is intact, coastline remains the same), 3 - Effective (community is protected from coastal inundation, storm waves, erosion & healthy beach condition)
Extent of Ownership	Clean surrounding area.	<b>1</b>		<b>3</b>	1 - Not clean, 2-Moderate, 3-Very clean
	Beach control access to reduce impact.	<b>1</b>		<b>3</b>	1 - Low, 2 - Moderate, 3 - High control
	Protection of the beach & vegetation.	<b>1</b>		<b>2</b>	0 - No protection, 1 - Low protection, 2 - Moderate protection, 3 - High protection (no access)
	Coastal replanting by community.	<b>1</b>		<b>2</b>	0 - no coastal planting, 1 - at least one coastal planting, 2 - community activity in routine, 3 - other support (NGO) for a community replanting program
	Set up control signs to access beach.		<b>1</b>	<b>2</b>	1 - No signs places/ no brush protection, 2 - At least one sign/ some form of brush protection, 3 - High - more signs visible/
	Brush protection to help sand build up.		<b>1</b>	<b>1</b>	
	Management actions to promote beach accretion.		<b>1</b>	<b>1</b>	1 - Low, 2 - Moderate, 3 - High

CHECKLIST	INCREASED PROTECTION	YES	NO	RATING	RATE WHERE RELEVANT
Peoples Perspectives (from focus interviews, surveys)	Is your coast protected.				1 - Poor, 2 - Satisfied, 3 - Good, 4 - Very good
	Community sense of safety.				
	Protection of property & other land uses.		1	1	1 - Low (frequent influence from coastal inundation affecting property), 2 - Moderate (occasional flooding of residential/community area), 3 - High (adjacent land to coast is fully protected).
Asset value/ number of assets					
Geospatial planning	Coastline change detection			NONE	
Total (%) Average	Total tally	10	9		
	% Level of IMPACT	47.6			76-100% Very high impact, 51-75% High Impact, 26-50% Medium Impact, 0- 25% Low Impact

Note: Secondary assessment - use of spatial mapping & focus group surveys to provide details on • extent of coastal change over time • did the structures reduce exposure & vulnerability of communities living adjacent to the coastline • level of protection of families and their properties etc.

### BASIC ASSESSMENT FORM: WATER SECURITY MEASURES

<b>Community:</b>		<b>Country ID:</b>		<b>Location: (GPS)</b>		Year of activity:
<b>Island/State/ Municipality:</b>		<b>How many households:</b>			Number of households with storage tanks:	Number roof catchment:
<b>Sources of Surface Water: (circle)</b>	Desalination plant/tank.	<b>Distance to closest water source:</b>			<30m <100m <500m <1km	
	Spring Well.	<b>River/Spring</b>			Water tank size:	
	Piped water supply-tank.	<b>Water tanks (reservoir, brake pressure tanks)</b>			If tank is source, what kind of tank: (ferro cement, roto mould, etc).	Team members:
<b>Improved Drinking Water Coverage</b>	Rainwater harvesting.	<b>Borehole</b>	Catchment dam.		Other water source: eg. stand-alone tank with a roof.	Ownership

CHECKLIST	Scale 0-3 for summarising water source & condition	0	1	2	3	RATE WHERE RELEVANT
Water source & Condition	Clean surrounding area (buffer zone of 15-30m from water source).					0 - Worst or not present at all, 1 - Poor condition, 2 - Fair condition, 3 - Good condition, 4 - Excellent condition
	Water source clean eg. Dam.					
	Source protection.					1 - Low protection, 2 - Moderate protection (side wall of well is high enough for safety, well with roof), 3 - High protection (well covered, walled well is high enough, roof over well)
	Clean tanks.					
	Cracks on water tanks.					
	Inspect pipeline, valves for leaks.					
	Leaky taps & pipes.					
	Measure flow @source (litres/min).					0 - No flow, 1 - Low flow rate due to leaks, 2 - Moderate, 3 - High flow rate
	Need to flush out sediment (dam catchment).					
	Condition of gutters if present.					3 - Very good (no leaves and dirt evident), 2 - Good (few leaves and little dirt seen), 1 - Poor (dirty and too many leaves in guttering).
	Need to clean & disinfect tanks.					
	State of water pump.					
<b>SUB-TOTAL</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Scale 1-5 for summarizing extent of which technical, environmental, social & financial/ economic aspects of asset have improved:		1 (not improved)	2 (somewhat improved)	3 (moderately improved)	4 (mostly improved)	5 (fully improved)
Water Facilities* according to JMP (WHO, UNICEF 2013). Condition	Piped water on premises.					
	Other improved water facility.					
	Other unimproved drinking - water sources.					
	Surface water.					
	Communal water storage capacity.					
<b>SUB-TOTAL</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Scale 1-3 for summarising level of improvement to harvesting systems.		1 (not improved)	2 (moderately improved)	3 (fully improved)
Harvesting systems	Tank attached to a building.			
	A stand alone tank has its own roof.			
	Condition of roofs.			
	Size of tanks.			
<b>SUB-TOTAL</b>		<b>0</b>	<b>0</b>	<b>0</b>

	Increased capacity		1	2	3	
Operation & Maintenance Capacity	Drinking water safety & security management plan (DWSSP).					
	Past training on maintenance and operation of water supply systems.					
	Functioning water committee.					Designated people responsible for how to operate and main water supply facilities, water system operational and in good repair.
	<b>SUB-TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

	Level of access & ownership	0	1	2	3	
Extent of Ownership	Increase in number of households with water tanks.					0 - Limited water access by households, 1 - Low, 2 - Moderate, 3 - High.
	Women, youth and disability representation in the water management committee.					1 - At least one member per group represented, 2 - Youth, women and disability represented, 3 - At least 50% of water committee are members of the vulnerable groups.
	Involvement in the development of DWSMP.					0 - No involvement, 1 - Some involvement during consultation, 2 - Involved throughout its development, 3 - Fully involved in the implementation of DWSMP including awareness, training for repair, maintenance & fundraising.
	Access to water by vulnerable groups - disability & elderly.					1 - Low (communal water tank), 2 - Moderate (families of disability and elderly have own tanks of water supply), 3 - High (Direct access of piped water into the home of the elderly & disability).
	<b>SUB-TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

	Scale 1-3 for summarising level of awareness.	0	1	2	3	
Level of awareness (from focus interviews, surveys)	Number of families trained in WASH practice.					Absolute number. 1 - Low (at least 25% of total families), 2 - Moderate (50% of families), 3 - High (<75% of families in the vicinity).
	Women, youth, disability involved in WASH training.					1- Low (at least 1 woman represented), 2 - Moderate (at least 50% of participants are women, inclusive of disability persons), 3 - High (more than half of participants were women).

	Handwashing practice observed					
	Soap availability - kitchen, bathrooms.					
	Any recent illnesses- typhoid, diarrhoea, dysentery.					
	Community sense of sanitation standard.					1 - Poor, 2 - Satisfied (at least 25% of sample), 3 - Good (50% of sample), 4 - Very good (at least 75% of sample of respondents).
	<b>SUB-TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

	Scale 0-4 for summarising level of awareness.	0	1	2	3	4
Types of Sanitation Facilities (and access)	Improved sanitation facilities.					
	Shared facilities.					
	Other unimproved sanitation facilities.					
	Signs of open defecation.					
Water quality	Treated water for drinking.					
	Water treatment methods.					0 - No treatment, 1 - Boiling water, 2 - SOLDIS/ UV, 3 - Filtration, 4 - Chlorination.
Wastewater - grey	Practice greywater management i.e. recycle for watering gardens.					
	Waste water is treated in soakage Pits, trenches and wetlands.					
	<b>SUB-TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TOTAL TALLY</b>					<b>0</b>
Total (%) Average	% average					
	% Level of IMPACT					76-100% Very high impact, 51-75% High Impact, 26-50% Medium Impact, 0- 25% Low Impact.

Note: Secondary assessment - use of social surveys for household and focus group to provide details on • condition and capacity of water infrastructure vs. quantity of water used per capita per day; % of households with access to reliable safe water supply & sanitation facility •Is there an increase in water availability for the targeted communities because of the improved water systems • % constructed water facilities maintained by community with past training; % recurrent costs for water supply services provided by community.