



Development of a National Portal for Tuvalu

Business Case

SPREP Pacific iCLIM

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1. Introduction

1.1 Report Purpose

The purpose of this report is to synthesise government and external user needs, outline solutions to meet these needs, and document the rationale for developing a climate change/disaster portal in Tuvalu.

This report is divided into two sections: Section 1 provides the context and key considerations for the business case. Section 2 outlines the business case, including recommendations for addressing key considerations and a transition strategy for implementation.

1.2 Background & Context

The Government of Tuvalu has indicated their interest in improving national climate change and disaster information management. In response to the Government of Tuvalu request, a multi agency team consisting of SPC ISACC Project, SPREP and Griffith University's Pacific iCLIM Project undertook a national mission in November 2017. The mission included consultations with key stakeholders from the Tuvalu Government, non-government organisations and civil society to discuss the national climate information management context. These consultations included brief stocktake of the types of information being used and stored in Tuvalu, and an initial assessment of user needs and key consideration for the design of a national portal.

Overall, there was agreement that there is need for a centralised repository for climate change and disaster-related information in Tuvalu. However, there are key challenges associated with internet connectivity, ICT infrastructure and a need for better systems support to ensure accessibility and usability of that climate change and disaster risk data. Despite this, there is a strong collaborative culture internal and external to government, which provides a strong foundation for information and knowledge management.

1.3 Other IKM Activities in Tuvalu

World Meteorological Organisation / Climate Change and Environment Canada Project

SPREP is the implementing agency for the World Meteorological Organisation / Climate Change and Environment Canada Project. This project involves developing information management policies for meteorological offices across the Pacific. There are three core components to the project:

- a) establishing a Pacific Island Climate Outlook Forum (PICOF) – a forum to meet with different stakeholders and understand seasonal climate prediction (3 completed);
- b) working with sectors and users of information to customise and tailor sector specific information to assist with planning and day-to-day activities; and
- c) development of a Drought Management Policies/Plans for national governments.

Under this project, the SPREP IT team is assisting the Government of Tuvalu to design and develop a national portal for the Tuvalu Meteorological Service to house data including tide data, forecasts, early warning, climate data, tsunami information.

1.4 Needs Assessment summary

The *SPREP Pacific iCLIM & ISACC Mission Report (2017)* identified the following information and knowledge management needs in Tuvalu:

- High speed **internet access**;
- Access to reports and final **outputs from projects** (including raw data);
- Information of **finance and grants** for climate and disaster projects (small to large);
- Access to **education material** (including curriculum and teaching guides for primary and secondary);
- Access to data for internal and external **reporting requirements**;
- Information on **who** is doing what in climate change and disaster risk reduction in each department;
- Indigenous and **traditional knowledge** products;
- Best practices and **lessons** learnt;
- Circulated **briefs from international meetings** and negotiations, including key decisions;
- Information to be accessible by all communities (including **outer islands**); and
- Significant climate change and disaster information to be **translated** to Tuvaluan.

High-level considerations

Based on this summary, listed below are a number of high-level considerations to ensure climate change/disaster IKM is integrated and maintained in Tuvalu:

- Improve national **information infrastructure** (including internet connectivity);
- Strengthen government **information management**;
- Support **information sharing** internally and externally to government; and
- Improve **information delivery** and **discoverability**.

1.5 Information and knowledge management barriers

There are major challenges associated with internet connectivity, ICT infrastructure and a need for better systems support to ensure accessibility and usability of that climate change and disaster risk data.

ICT infrastructure

Limited **IT infrastructure** and dis-location means that information is scattered with no common repository. Based on data collected on the iCLIM mission, and information from the World Meteorological Organisation / Climate Change and Environment Canada Project, there are two major challenges associated with server connectivity and in-country hosting:

- 1 **Server connectivity:** While there is relatively high speed internet available to Government ICT (13Mbps: 9Mbps Upload, 4Mbps download) from Tuvalu Telecom, there is a lack of systems and networking capacity/resources to resolve the ongoing networking infrastructure problems within Government ICT and the ministries as a whole.
- 2 **Hosting:** Currently, In-country hosting would difficult to sustain, as costs are high, and availability and speeds are not in proportion to the price. The 4G launch was expected to lower the monthly costs and increase speeds – however as of April 2018, we cannot confirm if this has happened.

Resourcing barriers

Other barriers to climate change IKM include:

- **Limited backup of data and information** – mostly on laptops and hard drives;
- Human resourcing and **capacity** (e.g. high staff turnover and leave);
- Lack of **common standard** for information sharing – access depends on relationships;
- Duplication and **over consultation** as information is not available;
- Lack of capacity for **cataloguing** information (environment library);
- Difficulty of **geographic isolation** for outer islands;
- Language – not enough resources are **translated**.

2. Business Case for Development

2.1 System design

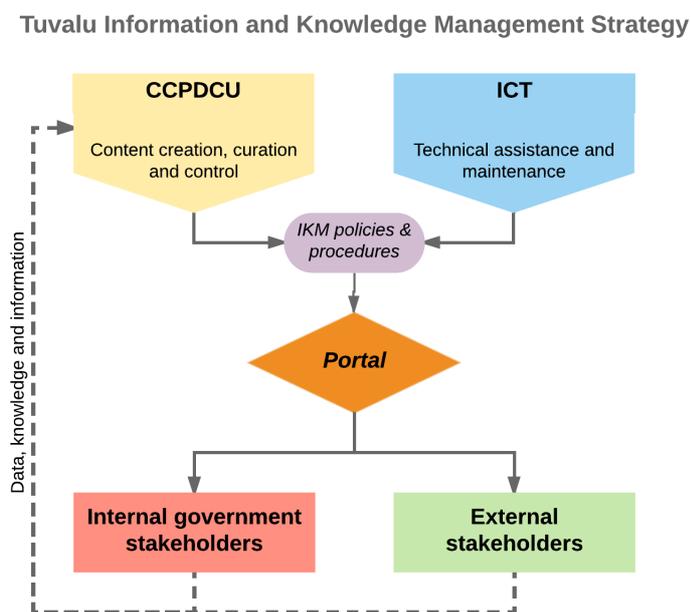


Figure 1 - System Design Strategy

2.2 System hosting & Maintenance

The establishment of a national climate change portal for Tuvalu will require the following:

- **Hosting:** the portal to be hosted at a hosting provider; and
- **Maintenance and management:** human resources to perform server management and maintenance.

The provision of hosting and maintenance will incur ongoing costs for as long as the portal is active, and these costs will vary depending on the where the portal is hosted and how server management and maintenance is delivered.

The following recommendations have been made with consideration of the ICT infrastructure and resourcing barriers in Tuvalu:

Recommendation 2.1: Considering the general infrastructure barriers currently present in Tuvalu, we recommend that that a new portal would be hosted on external cloud hosting. Speed tests have been conducted from Government ICT and Tuvalu Met to servers hosted in the AWS cloud specifically in the US and Asia Pacific regions. SPREP IT has concluded that until local networking/bandwidth issues are resolved, the best web hosting option for Tuvalu would be an AWS cloud server based in Sydney.

Recommendation 2.2: Based on the current resourcing situation in Tuvalu, it is recommended that the server and system administration of the new portal should be managed through SPREP IT, for at least the first 12 months, as they have the resources and skills to maintain a Drupal CMS site. To strengthen government information management/infrastructure over time, it would be ideal to gradually train in-country resources. After the initial 12

months, an assessment on whether its feasible and logical to move the hosting over to in-country resources, or for SPREP IT to continue hosting the solution can be done.

Recommendation 2.3: Consideration should be given by Tuvalu to include charging all new climate change projects a fee (1-2%) to go towards longer term maintenance of the system.

2.3 Portal interface (i.e. function, design and layout)

Useability is a key requirement of any information repository or portal. The user interface must be well branded, easy to navigate, and have good search functionality to enable users to easily locate information.

Recommendation 2.4: The branding for the site should be aligned with Tuvalu Government website(s) for consistency. This is important in order to support information sharing both internally and externally.

2.4 Portal administration and content

Training in-country resources is critical to strengthening government information management and supporting the ongoing usage and maintenance of the portal.

Recommendation 2.5: While it's recommended that the server and system administration of the portal is done by SPREP IT for an initial 12-month period, it is also recommended that one or more resources within CCDPCU and the ICT Division (e.g. IKM & IT officers) receives training in day to day portal administration and content management. These resources will then be able to add/edit/remove content and users on the portal.

2.5 Data sharing and integration

It is important that the new national portal can integrate with other sites (e.g. Met Office, Fisheries, etc.) and databases in Tuvalu (e.g. IISD-supported Vulnerability Database). Integration could either be achieved by the websites linking to each other or via sharing data when applicable.

A national portal for CC/DRR data will also help satisfy international reporting requirements associated with international conventions regarding reporting requirements for public registry.

Recommendation 2.6: Using the National Portal Starter Package for the Tuvalu portal will ensure it is established to exchange metadata with the Pacific Climate Change Portal. Using regionally agreed metadata profiles will therefore maximise discoverability and sharing of Tuvalu-based information. The savings in development time from using the Starter Pack will allow us to spend more time on actually implementing the system and connecting data sources, instead of having to spend a long time scoping out a new system. This will lead us to focusing on implementing the solution rather than scoping out a new technical system.

2.6 Inter-agency collaboration

Building on relationships between CCDPCU and the ICT Division will be essential to ensuring that the content and technical requirements of the Tuvalu CC/DRR portal continue to be met. In addition, feedback must also be sought from internal government stakeholder and external stakeholders to ensure the design of the portal meets the needs of users.

In consideration of the *SPREP Pacific iCLIM & ISACC Mission Report* findings we recommend approaching IKM improvements in three stages. These three transition stages reflect contextual challenges observed in Tuvalu, and

aim to ensure that climate change and disaster IKM solutions are fit for purpose now, while still being open for scalability in the future.

2.7 Transition strategy / Next steps

Proposed activities for portal development are divided into 3 stages.

Stage 1 Setup & Manual Resource Collation Phase

- Commence collection of Key Resources from across government
- Draft and consult on IKM policies and procedures within government
- Commence implementation of IKM policies and procedures
- *SOFTWARE DEVELOPMENT: Setup development/test version of the national portal*

Stage 2 Implementation Phase

- Continue resource collection
- Commence entering resources into new portal/ local database
- Share technical maintenance responsibility with ICT
- Continue implementation of IKM policies and procedures
- *SOFTWARE DEVELOPMENT: Add new functionality and Branding to portal*

Stage 3 Deployment and Handover Phase

- Stakeholder acceptance testing of portal
- Finalise data entry of collected resources
- Provide training and awareness raising
- *SOFTWARE DEVELOPMENT: Deploy to live server and handover*
- Full launch with all internal and external stakeholders

This three-stage transition means that investments in resourcing, infrastructure and training can continue to be built upon as internet connectivity and resourcing improves in the coming years. In every stage, ensuring sustainable IKM workflows for creating, storing and sharing informational resources to best enable re-use and discoverability is vital.

This transition strategy recognises the barriers identified during consultations (including poor internet connectivity, limited ICT infrastructure, dis-location, limited backup of data and information, capacity, and lack of a common standard for information sharing) while still ensuring that IKM improvements are progressed as soon as possible. At all stages of this transition the ISACC and iCLIM Projects will provide assistance to ensure that the design of the outputs of the different stages are designed to be scalable and adaptable to change.

While this transition strategy is enabled over the coming months, the ISACC and iCLIM Projects will assist the Government of Tuvalu to draft policies and procedures for IKM. These policies and procedures will be applicable to all stages of the transition strategy. This will ensure that awareness raising and implementation of these policies and

procedures is integrated from inception and cultivated internally and externally to government as the portal comes to fruition.

Tuvalu - Proposed Implementation Schedule

Task	2018						2019		
	July	August	September	October	November	December	January	February	March
Stage 1 Setup & Manual Resource Collation Phase									
SOFTWARE DEVELOPMENT: Prepare Team For development process	█								
Commence Collection of Key Resources from across government	█	█							
Commence implementation of IKM policies and procedures	█	█							
Draft and consult on IKM policies and procedures within government	█	█							
SOFTWARE DEVELOPMENT: Setup development/test version of the national portal	█	█	█						
Stage 2 Implementation Phase									
Continue Implementation of IKM policies and procedures			█	█	█	█			
Commence entering resources into new portal			█	█	█	█			
Share technical maintenance responsibility with ICT			█	█	█	█			
SOFTWARE DEVELOPMENT: Develop New Functionality and Branding			█	█	█	█			
Stage 3 Deployment and Handover Phase									
Finalise data entry of collected resources						█	█	█	
Stakeholder acceptance testing of portal						█	█		
Provide training and awareness raising						█	█	█	
SOFTWARE DEVELOPMENT: Deploy to live server & handover						█	█		
Launch Activities with all internal and external stakeholders							█	█	

Figure 2 - Proposed Implementation Schedule